

CURRENT USE OF AUGMENTATIVE AND ALTERNATIVE COMMUNICATION IN
MUSIC THERAPY: A SURVEY AND CASE STUDY

A Thesis
by
SARAH MEGAN ROBERTS

Submitted to the Graduate School
Appalachian State University
in partial fulfillment of the requirements for the degree of
MASTER OF MUSIC THERAPY

May 2012
Hayes School of Music

CURRENT USE OF AUGMENTATIVE AND ALTERNATIVE COMMUNICATION IN
MUSIC THERAPY: A SURVEY AND CASE STUDY

A Thesis
by
SARAH MEGAN ROBERTS
May 2012

APPROVED BY:

Cathy H. McKinney
Chairperson, Thesis Committee

Christine P. Leist
Member, Thesis Committee

Sharon Richter
Member, Thesis Committee

William L. Pelto
Dean, Hayes School of Music

Edelma D. Huntley
Dean, Research and Graduate Studies

Copyright by Sarah Megan Roberts 2012
All Rights Reserved

ABSTRACT

CURRENT USE OF AUGMENTATIVE AND ALTERNATIVE COMMUNICATION IN MUSIC THERAPY: A SURVEY AND CASE STUDY. (May 2012)

Sarah Roberts, B.M., University of Tennessee at Martin

M.M.T., Appalachian State University

Chairperson: Cathy H. McKinney

The researcher investigated the use of augmentative and alternative communication (AAC) in music therapy with individuals with developmental disabilities. Respondents ($N = 42$) were members of the American Music Therapy Association who indicated working with individuals who have developmental disabilities. Respondents reported their use of clients' AAC devices in music therapy sessions. Results were gathered using an Internet based survey. Results indicated that a majority of music therapists working with clients who use AAC devices incorporate these devices into music therapy sessions in a variety of ways. The results implied that the greater amount of education regarding AAC devices the greater number of ways AAC devices are incorporated into music therapy sessions. A case study regarding implementation of music therapy sessions with a child who used AAC was included for the purpose of demonstrating possible methods of implementation and to gain perspective of the rewards and challenges with this inclusion of the client's AAC device.

ACKNOWLEDGMENTS

I would like to thank my committee chair, Dr. Cathy McKinney, for all of her support throughout this process. Her guidance and encouragement truly aided the development of this thesis. I am grateful for her assistance in making this possible.

Additionally, I would like to thank the members of the thesis committee. Dr. Christine Leist and Dr. Sharon Richter were wonderful additions to the committee. I am thankful for your support and expertise in this project.

I would also like to thank the Graduate Student Association Senate for a Travel Grant to present this information at the Southeastern Region American Music Therapy Association Conference in Charlotte, NC.

Lastly, I would like to thank my family for your never-ending support throughout this process. You have provided a great amount of support over the years, which has helped me grow into the person I am today.

TABLE OF CONTENTS

Abstract.....	iv
Acknowledgements.....	v
List of Tables	viii
List of Figures.....	ix
Chapter 1: Introduction.....	1
Chapter 2: Literature Review.....	4
Developmental Disabilities.....	4
Augmentative and Alternative Communication	5
Aided AAC for Individuals with Developmental Disabilities.....	8
Aided AAC devices in Music Therapy.....	13
Chapter 3: Method of Survey.....	17
Respondents	18
Procedure	18
Chapter 4: Results of Survey	20
Chapter 5: Case Study.....	30
The Client	30
Phase One: The Vantage Lite	31
Phase Two: The Tobii Communication Device	39
Chapter 6: Discussion and Conclusions.....	47

Research Questions.....	47
Comparison to Previous Literature.....	50
Implications for Practice.....	52
Limitations.....	53
Implications for Further Study.....	53
Conclusion.....	55
References.....	56
Appendix A: Survey Tool.....	60
Appendix B: Examples of Communication Devices.....	66
Vita.....	70

LIST OF TABLES

Table 1: Frequency of Credential or Designation.....	20
Table 2: Level of Education of Respondents.....	21
Table 3: Percent of Clients who Use AAC Devices.....	24
Table 4: Estimated Percent of Inclusion of Clients' AAC Devices.....	26
Table 5: Uses of AAC Devices in Music Therapy Sessions.....	27

LIST OF FIGURES

Figure 1: Percent of Respondents per AMTA Region.....	22
Figure 2: Picture Icons	66
Figure 3: LITTLEmac ®.....	66
Figure 4: BIGmac ®	67
Figure 5: TechTalk.....	67
Figure 6: DynaVox	68
Figure 7: Vantage Lite	68
Figure 8: Chatbox	69

CHAPTER ONE

INTRODUCTION

An estimated 3.5 million Americans are unable to meet their everyday communication needs with their natural speech (Beukelman & Mirenda, 2005). Intellectual disability, cerebral palsy, and autism are the most common causes of these severe communication disorders (Beukelman & Mirenda). The use of augmentative and alternative communication (AAC) has become an increasingly common means to address such communication needs.

AAC has been defined as “a set of procedures and processes by which an individual’s communication skills (i.e., production as well as comprehension) can be maximized for functional and effective communication” (American Speech-Language-Hearing Association, 2002, para. 10). These procedures may be used to supplement or replace an individual’s natural communication through the use of symbols. Symbols can be either aided or unaided. Aided symbols involve some type of device (e.g., communication books, communication boards, electronic devices) that an individual uses to convey a message, such as picture symbols, line drawings, and other communication devices. Unaided symbols make use of the body to communicate a message, such as gestures or manual sign language.

Music therapy is a practice that has commonly served individuals with developmental disabilities. The American Music Therapy Association (AMTA) has defined music therapy as

an established health profession in which music is used within a therapeutic relationship to address physical, emotional, cognitive, and social needs of individuals. After assessing the strengths and needs of each client, the qualified music therapist provides the indicated treatment including creating, singing, moving to, and/or listening to music. Through musical involvement in the therapeutic context, clients' abilities are strengthened and transferred to other areas of their lives. Music therapy also provides avenues for communication that can be helpful to those who find it difficult to express themselves in words. Research in music therapy supports its effectiveness in many areas such as: overall physical rehabilitation and facilitating movement, increasing people's motivation to become engaged in their treatment, providing emotional support for clients and their families, and providing an outlet for expression of feelings. (AMTA, 2011, para. 2)

Specifically related to individuals with developmental disabilities, common music therapy goals have included (a) cognitive skills, (b) communication skills, (c) developmental goals, (d) leisure activities, (e) motor skills, and (f) social and emotional skills (Davis & Farnan, 2008; Thaut, Mertel, & Leins, 2008).

Little research exists regarding music therapists' work with individuals who use aided AAC. Recently, researchers conducted two surveys that specifically addressed issues related to AAC (Gadberry, 2011; McCarthy, Geist, Zojwala, & Schock, 2008). The findings of McCarthy et al. (2008) suggested that approximately 50% of music therapists work with individuals who use aided AAC devices. However, when Gadberry surveyed music therapists who work with individuals with autism who use aided AAC devices, she found that only 14.6% regularly incorporate these devices in music therapy sessions. The survey results gave

no reasons for this small percentage. Given the paucity of literature related to music therapy and AAC, additional research is warranted.

CHAPTER TWO

LITERATURE REVIEW

To gain a better understanding of augmentative and alternative communication and its current use by individuals with developmental disabilities, a review of literature on these topics will be discussed. A basic definition of developmental disabilities will be given. In relation to augmentative and alternative communication, the various types will be defined and the current use and perspectives of the users, family, and various communication partners will be explored. Finally, current practices regarding music therapy and AAC will conclude the chapter.

Developmental Disabilities

The category of developmental disability includes such diagnoses as intellectual disability, cerebral palsy, and autism spectrum disorders (Odom, Horner, Snell, & Blacher, 2007). Developmental disability has been defined as

a set of abilities and characteristics that vary from the norm in the limitations they impose on independent participation and acceptance in society. The condition of developmental disabilities is developmental in the sense that delays, disorders, or impairments exist within traditionally conceived developmental domains such as cognitive, communication, social, or motor abilities and appear in the developmental period, which is usually characterized as before 22 years of age. (Odom et al., 2007, p. 4)

The National Joint Committee for the Communication Needs of Persons with Severe Disabilities (1992) developed a Communication Bill of Rights, which states, “All persons, regardless of the extent or severity of their disabilities, have a basic right to affect, through communication, the conditions of their own existence” (para. 12). Furthermore, the committee specified that individuals with severe disabilities should be ensured with specific communication rights in all daily interactions. These rights include, but are not limited to, (a) being provided with choices, (b) treatment and interventions that enable individuals with disabilities to communicate through whatever mode is effective and efficient, and (c) access to any needed AAC device at all times. This document displayed the need and right of individuals with developmental disabilities to have access to other methods of communication.

Augmentative and Alternative Communication

AAC is a means to replace or supplement natural communication through the use of symbols (ASHA, 2002). These symbols can be classified into one of two categories: aided and unaided. When an individual uses aided symbols, this is referred to as aided communication. The process of aided communication involves the use of a device from which symbols (i.e., pictures, words, letters, and speech output) are transmitted or received (ASHA, 2004). These devices may be either electronic or nonelectronic.

Nonelectronic aided communication devices typically consist of pictures, line drawings, real objects, or tactile symbols (Beukelman & Mirenda, 2005). These devices may be used individually or organized into communication boards or books when pictures or line drawings are used as the symbols. This allows aided communication devices to be more easily transported, organized, and referenced.

Electronic aided communication includes several types of devices. Some electronic devices are speech-generating (Beukelman & Mirenda, 2005). Speech-generating devices are made up of a wide variety of devices with a broad range of abilities. These include (a) switch devices, (b) fixed displays, (c) dynamic displays, (d) hybrid displays, (e) visual scene displays, and (f) synthesized speech devices.

One of the simplest devices is a talking switch on which a short message can be recorded (Beukelman & Mirenda, 2005). Some models allow for a single message, while other models allow for multiple messages to be stored. When the device is activated, the message is then played. To activate the device, the user can use direct selection by pressing the switch plate or remote selection when a separate switch is attached to the device. Remote selection allows alternative access through methods such as a head switch or a sip/puff switch. Advantages of this type of device, as described by Beukelman and Mirenda, included ease of use, particularly by beginning communicators, and lightweight and transportable construction. Limitations of these devices included limited vocabulary and inability to plan for novel speech needs. Examples of such devices include the BIGmac® and LITTLEmac® (AbleNet, Inc., 2011).

The next type of device, the fixed display, is comprised of a limited number of symbols in a fixed location from which a user can select (Beukelman & Mirenda, 2005). These may be either electronic or non-electronic. Some devices may include multiple levels that can increase the number of symbols to be greater than the number of items on the display. For example, in a non-electronic device, such as a communication book with pages of icons, each page would be considered a level. In electronic devices, a switch or light may indicate which level is in use. Advantages of these devices include a slightly larger selection

set than a talking switch and ease of learning to use the device. Beukelman and Mirenda listed limitations of fixed display devices as being cumbersome to carry, difficulty in changing topics of discussion, and limited vocabulary sets. Such electronic devices may include a TechTalk by Mayer-Johnson, Inc., or Cheap Talk by Enabling Devices, among several others.

The third device, the dynamic display, is more complex than the previous devices (Beukelman & Mirenda, 2005). This type of device consists of a computer screen that displays visual symbols. When symbols are activated, the selection set on the screen changes to a new set of symbols. Beukelman and Mirenda described the process of selection as going through folders of related material until reaching the specific page needed to communicate a particular message. Advantages of these devices include larger vocabulary sets allowing for more novel speech, diversity of selection techniques available on devices, and flexibility of programming devices. However, limitations of the devices include bulky design, difficulty of programming devices, and high cost. Examples of hybrid display devices include the DynaVox by DynaVox Systems, LLC; Springboard and Vantage by Prentke Romich Co.; and eTalk-GT by ZYGO-USA.

Hybrid displays make up the next category of electronic devices. Beukelman and Mirenda (2005) described the devices as fixed displays with some dynamic component, such as a light that indicates what choices are available for selection. The authors stated these devices could be particularly useful when symbol selection occurs through iconic codes, where the user memorized codes that are typed into the device to recall a specific message. An example of this device is the Chatbox by Prentke Romich Company.

The last type of device involves converting digital data into synthesized speech (Beukelman & Mirenda, 2005). This type of device involves taking text entered through a keyboard and converting it into a speech output. Computer systems are one type of technology containing AAC software, particularly text-to-speech software. Advantages to this type of communication device include the unlimited vocabulary and the availability of computer technology. Limitations may include slowed rate of response if typing every word, understanding speech generated by a computer, and cumbersome design of computers.

These devices were categorized by level of technology. Desch and Gaebler-Spira (2008) listed three categories of aided communication devices. Low-tech devices were described as non-electronic devices. The authors defined mid-tech devices as having battery power and contain recorded messages. Switches and fixed display electronic devices were placed in this category. Lastly, high-tech devices were described as having microcircuits and microcomputer technology. Dynamic displays and computers with AAC technology were placed in this category by the authors.

Aided AAC for Individuals with Developmental Disabilities

AAC techniques have become a common practice with individuals with developmental disabilities (Beukelman & Mirenda, 2005). For individuals with autism, speech output devices have also become more common in the past ten years. Particularly with individuals with cerebral palsy, a highly individualized system is commonly needed to achieve optimum results with the AAC system due to physical limitations of the individual. With aided AAC becoming more common, professionals who work with this population need knowledge of AAC systems.

Several surveys have been conducted that explored various aspects of adults' lives related to aided AAC use. One such survey investigated the relationship between communication and quality of life (Hamm & Mirenda, 2006). The researchers found a significant, positive correlation between survey scores on a quality of communication measure and survey scores on a quality of life measure. The researchers suggested that providing communication supports could increase the quality of life of individuals with developmental disabilities. Another survey of adults with cerebral palsy who used aided AAC devices explored individuals' satisfaction with AAC devices (Smith & Connolly, 2008). The authors found that most participants were pleased with their communication devices; however, a majority of participants indicated a desire to use their devices more often. The survey also suggested that a major hindrance to using the device was the lack of familiarity with responding to communicators by communication partners. Other limits to AAC device use included vocabulary limitations, limited battery supply, and lack of support for the device. Both studies suggested a barrier to aided AAC systems was lack of support by professionals (Hamm & Mirenda, 2006; Smith & Connolly, 2008).

Other studies have looked at childrens' and adolescents' perspectives of aided AAC. Valiquette, Sutton, and Ska (2010) interviewed eight individuals who attended school and used speech-generating devices. The researchers were interested in discovering the participants' satisfaction with their speech-generating devices and their ability to communicate across four settings: (a) school, (b) home, (c) leisure/phone, and (d) community. The results indicated that the participants used their devices primarily in school and home settings. Participants indicated the most dissatisfaction in settings where they did not use their speech-generating devices. These were in leisure and community settings. This

study indicated that speech-generating devices may improve communication satisfaction in various environments.

Clarke, McConachie, Price, and Wood (2001) investigated the views regarding devices among young people in England who use aided AAC devices. The researchers discovered that the participants found their devices useful; yet, they also viewed their devices as being difficult to operate, embarrassing to use, and slow. Also, the participants preferred one-to-one sessions with goals focusing on learning to use the devices rather than group sessions or services provided in the classroom. This suggests a need for training to use aided AAC devices when working with children who use such devices.

More recently, a study looked at the identity of adolescents who use AAC devices (Wickenden, 2011). Wickenden used an ethnographic approach and observed 15 participants over a two-year period in a variety of settings. Her data were triangulated with interviews of the participants, their parents, and their school personnel (e.g., teachers, therapists). Wickenden found that nearly all participants described themselves positively, related to peers without disabilities, and chose to discuss topics similar to that of same-aged peers. Wickenden noted the participants' views of their aided AAC devices. All used speech-generating devices in addition to other low-tech devices and unaided forms of AAC. A majority of participants found their speech-generating devices to be a vital part of their lives and would become frustrated when they did not function properly. Parents of the participants stated that the general public needed increased knowledge of both disabilities and interacting with individuals who use aided AAC. The results of this study indicate the value children and adolescents place on their aided AAC devices.

One survey compared the user's perspective of aided AAC devices to that of formal communication partners (e.g., speech-language therapists, teachers) and informal communication partners (e.g., friends, nurses, personal assistants; McCall, Marková, Murphy, Moodie, & Collins, 1997). McCall et al. surveyed 89 users along with one formal and one informal communication partner for each AAC user. The researchers found that slightly less than half of the users utilized low-tech devices only and slightly more than half utilized high-tech devices. Of the high-tech device users, approximately half also used low-tech devices in addition to the high-tech devices. The results of the survey indicated that the more complex or abstract a question is for the AAC user, the more communication problems occur. Significant differences were found between professionals' and informal communication partners' opinions concerning available vocabulary for specified situations. This suggested that informal communication partners should be given more opportunities to provide vocabulary words for use in the AAC devices, making the vocabulary more applicable for the individual using the device. When participants were asked to describe advantages and disadvantages of the AAC devices, less than half of the AAC users were able to express themselves to the researchers, suggesting a limitation of their devices. However, of those who did respond, a majority of the advantages provided described high-tech devices. These results indicate a need for collaboration among several communication partners for each AAC user. In addition, they suggest a preference among users and communication partners for high-tech AAC devices.

Several other studies have investigated the perspectives of family members and teachers regarding interactions with individuals who use AAC devices. Teachers' perspectives of aided AAC devices in the classroom have been examined (Johnston,

McDonnel, Nelson, & Magnavito, 2003; Soto, 1997; Stoner, Angell, & Bailey, 2010).

Johnston et al. included the teacher perspective of an AAC intervention in an early education classroom. The researchers found that the overall perspective of the teachers to be positive. Specifically, the teachers found that the technique was simple enough to implement while still attending to the other children in the class. They also found that the time required for learning the technique was valuable, given improved results.

The two other studies indicated that increased training and support regarding AAC devices and implementation would result in greater gains for students using the devices (Soto, 1997; Stoner et al., 2010). Specifically, Stoner et al. interviewed general education teachers regarding the implementation of an aided AAC device for a single student with cerebral palsy whom all of the teachers served. The researchers found that while the educators were overall positive in regard to inclusion of the device, the problems the teachers faced with the device were never discussed with the treatment team or fellow teachers. The study also indicated that a majority of the problems could have been addressed by having regular support from individuals with training in AAC devices. However, teachers named positive effects including class participation at the same level of peers and increased social interaction with the student with cerebral palsy.

In the second study, Soto (1997) surveyed special educators regarding their own use of AAC devices. The results suggested a relationship between the educator's confidence in her or his abilities to implement communication strategies and the student's ability to communicate. Soto indicated that increased support for teachers learning AAC techniques could result in greater communication abilities for students.

Family perspectives of AAC devices have also been addressed in the research. Surveys and interviews have suggested that a majority of families view the aided AAC devices used by immediate family members as positive (Angelo, 2000; Gailey, Parette, Jr., Stoner, Angell, & Carril, 2006). Benefits of the devices included increased independence across multiple settings, including in the community, at work, and with peers (Angelo, 2000; Gailey et al., 2006). Family members described the ease of use of the AAC device by the user and easy programmability of the device as benefits to aided AAC devices (Gailey et al.). Angelo also found that the use of AAC devices by individuals with communication impairments leads to more positive family relationships. Contrastingly, Gailey et al. also found barriers to effective AAC device use viewed by family members. The researchers determined that common difficulties included ineffective teaming with professionals at the child's school. For example, some families expressed concern regarding an inadequate amount of support given in both selecting an AAC device and training on how to program the devices. Gailey et al. indicated that other barriers to effective AAC device usage were limitations of the device in terms of vocabulary and reliability. These studies suggest positive outcomes for communication in multiple settings among individuals who use AAC devices, but also show the need for more support among team members.

Aided AAC devices in Music Therapy

Research regarding the implementation of aided AAC devices in music therapy sessions is quite limited. First, Humpal and Dimmick (1995), two music therapists, suggested ways to incorporate AAC devices into music therapy sessions and music education classrooms. The authors recommended switch devices be used to record portions of songs for children with special needs to activate in order to participate in singing activities.

Additionally, the authors recommended the use of electronic AAC devices for choice making. McLaughlin (2006) also provided suggestions for incorporating AAC devices in music therapy sessions. The author recommended the use of a BIGmac® switch in sessions when working on communication goals with children with communication disorders. The author also noted the use of other electronic AAC devices, at the same time cautioning that usage should be implemented with consultation from the child's educational team. These resources only provide suggestions on use of aided AAC devices rather than guidelines or empirical evidence to support their use in music therapy.

Two surveys have been conducted that investigated the use of aided AAC in music therapy (Gadberry, 2011; McCarthy et al., 2008). McCarthy et al. surveyed music therapists regarding their collaboration with speech language pathologists and their experiences with AAC. The results indicated that over half of respondents worked with clients who used AAC. Clients were primarily school-aged individuals identified with (from most prevalent to least) autism/pervasive developmental disorder, developmental delay, multiple disorders, or a non-specified speech/language impairment. The AAC systems used by clients included both unaided AAC (e.g. gestures and signs) and aided AAC devices (e.g. real objects, communication boards, and electronic devices). The category of electronic devices included all devices that produce speech, ranging from low-tech devices such as the BIGmac® to high-tech devices such as the Dynavox. With the high percentage of each type of AAC system used, the research suggested that music therapists come into contact with multiple types of devices. However, when asked about expertise level with AAC, music therapists reported an average level of expertise at 3.9 on a 7-point scale. Common goal areas for individuals who use AAC systems in order of frequency rating were expressive

communication, receptive communication, socialization, emotional/behavioral, fine/gross motor, and academic. While this survey provided some insight into music therapists' work with aided AAC, much was left unknown.

A more recent survey involved music therapists' use of aided AAC with individuals who have autism spectrum disorders (Gadberry, 2011). The survey was limited to music therapists who had indicated to the Certification Board of Music Therapists that they work with clients with autism. The results indicated that over 80% of clients served use aided AAC outside of music therapy sessions. However, only 14.6% of music therapists reported using aided AAC in sessions with all clients who utilize aided AAC systems. In addition, only 33.8% of music therapists reported using aided AAC with most (i.e. 65-99%) of the clients in this category. The researcher found that a significant, positive relationship existed between music therapists having additional training in AAC and music therapists using AAC in sessions. The most common ways aided AAC was used in sessions included picture schedules while singing, when giving directions, as task schedules, and for discussion. Less than 1% of respondents indicated the use of aided AAC for choice making and for expressive communication when given a write-in option. Gadberry also found a positive relationship between aided AAC used to promote literacy, such as increasing vocabulary, and additional training of music therapists in aided AAC. Survey results indicated that 40% of music therapists received additional training in aided AAC, with a majority of training occurring through in-service training at work followed by individual training from a speech language pathologist. However, over 70% of music therapists indicated they would benefit from additional training on aided AAC. This study revealed the lack of aided AAC use in music

therapy. However, the reasons behind the lack of use were not explored, nor were the types of aided AAC devices used in sessions.

The current research suggests a relationship between communication abilities and quality of life for individuals with developmental disabilities (Hamm & Mirenda, 2006). Individuals who use aided AAC devices and their families have indicated they value their aided AAC devices (Angelo, 2000; Clarke et al., 2001; Gailey et al., 2006; Smith & Connolly, 2008; Stoner et al., 2010; Wickenden, 2011); however, individuals still need or want more opportunities to practice utilizing their devices (Clarke et al., 2001; Smith & Connolly, 2008). The research also suggests that when professionals have additional training in aided AAC, they are more likely to incorporate these devices into their practice (Gadberry, 2011; Soto, 1997). Further, current music therapy research also revealed a lack of knowledge related to using aided AAC devices with clients, although the reason for this lack of knowledge and use is unknown (McCarthy et al., 2008; Gadberry, 2011). More information is needed on current practices in music therapy regarding use of aided AAC.

The purpose of this paper is to describe current practices of music therapists regarding use of various types of aided AAC devices and to investigate any existing relationships between training on AAC devices and inclusion of AAC devices in music therapy sessions.

CHAPTER THREE

METHOD OF SURVEY

An Internet-based survey was developed regarding music therapists' use of various types of aided AAC devices in music therapy sessions with clients who have developmental disabilities. The survey was developed by the researcher and reviewed by university professors and the Internal Review Board of Appalachian State University for quality purposes. The primary research questions of the survey were designed to discover (1) What percentage of music therapists utilized aided AAC devices in music therapy sessions with clients who already utilized AAC devices? (2) What reasons were given for not using aided AAC devices in sessions? (3) If aided AAC devices were used in sessions, how were they used? (4) What other training or support regarding aided AAC devices have music therapists received? (5) What relationships exist between inclusion of AAC devices in music therapy sessions and training in AAC devices? Demographic questions were included. Some survey questions were adapted from Gadberry's 2011 survey.

The survey consisted of 17 questions. A combination of multiple choice and open-ended question formats were used. Demographic information surveyed included music therapy credential, number of years practicing, number of years working with individuals who have developmental disabilities, AMTA region, level of education, populations served, and work setting. Based on answers to the question concerning client use of AAC devices, the survey ended or continued. The answer of "no" led to the last question of the survey. The

answer of “yes” continued the survey. Based on answers to the question concerning the music therapist’s incorporation of the client’s AAC device in music therapy sessions led to specialized questions. The answer of “no” led to the open-ended question of barriers concerning inclusion of the AAC device. The answer of “yes” led to the open-ended question of ways the client’s AAC device is included in the session. Participants who indicated “yes” to this question also were prompted to indicate the session format (individual, small group, large group) in which they included the device. All participants were prompted to answer questions concerning training on AAC devices.

Respondents

Respondents included 42 music therapists identified through the American Music Therapy Association online directory. Qualifications for inclusion in the survey were that the individual be a music therapist with the credential of (a) Music Therapist-Board Certified, (b) Registered Music Therapist, (c) Certified Music Therapist, or (d) Advanced Certified Music Therapist who indicated they work with individuals who have developmental disabilities. The populations included in the search from the online directory included (a) autism spectrum, (b) developmental disability, (c) multiple disabilities, (d) physical disabilities, and (e) Rett syndrome. One hundred six music therapists were identified to fit the criterion, and 42 music therapists replied to the survey, resulting in a response rate of 39.6%.

Procedure

Surveys were distributed through email with a web-based link to the survey to this group of therapists, along with an explanation that the survey is part of completion of a thesis required for a Master of Music Therapy degree. The researcher’s contact information, as well as that of the thesis advisor, was provided should participants have questions regarding the

research. Reminder emails concerning completion of the survey were sent two weeks following the initial invitation to participate in the survey. A consent statement was included at the beginning of the survey stating that completion of the survey indicates consent. At the close of the survey, 42 music therapists responded to the survey.

Once the survey completion period expired, the survey data was entered into an SPSS database and analyzed. Descriptive analysis of the data occurred as well as analysis for significant relationships between responses. Open-ended responses were analyzed and grouped according to common themes.

CHAPTER FOUR
RESULTS OF SURVEY

A total of 42 music therapists out of 106 identified responded to the survey with a response rate of 39.6%. All responses were included in the results. Respondents first identified their music therapy credential. A majority of respondents (92.9%) indicated having the credential of Music Therapist-Board Certified. Table 1 presents the data for credential or designation.

Table 1

Frequency of Credential or Designation

Credential	Frequency	Percent
Music Therapist-Board Certified	39	92.9
Registered Music Therapist	2	4.8
Certified Music Therapist	1	2.4

Note. All respondents replied to this question.

Regarding number of years practicing as a music therapist, the average number of years' experience was 12.4 years, with a range of 1 to 50. The median number of years' experience was 8 years, and the mode was 8 years. The average number of years working with individuals with developmental disabilities was 9.7 years, with a range of 1 to 50. The median number of years working with this population was 7 years, and the mode was 2 years.

Respondents indicated all completed levels of education. If a respondent held a master's degree in another field (not music therapy), they were asked to identify the field. Multiple responses were possible per respondent. The top two responses included bachelor's

degree in music therapy (57.1%) and master's degree in music therapy (28.6%). No respondents indicated having a doctoral degree in music therapy or another field. Table 2 presents the data regarding level of education.

Table 2

Level of Education of Respondents

Education Level	Frequency	Percent
Bachelor's in Music Therapy	24	57.1
Master's degree in Music Therapy	12	28.6
Bachelor's degree in another field	7	16.7
Master's degree in another field	7	16.7
Doctoral degree in music therapy	0	0.0
Doctoral degree in another field	0	0.0

Note. One respondent did not reply to this question. Master's degree in other fields included Master of Arts in Music, Special Education, and no response.

Respondents reported the region of the American Music Therapy Association in which they currently practice. Responses indicated a majority of respondents practiced in the Mid-Atlantic Region (35.7%) and Great Lakes Region (19.0%), as displayed in Figure 1.

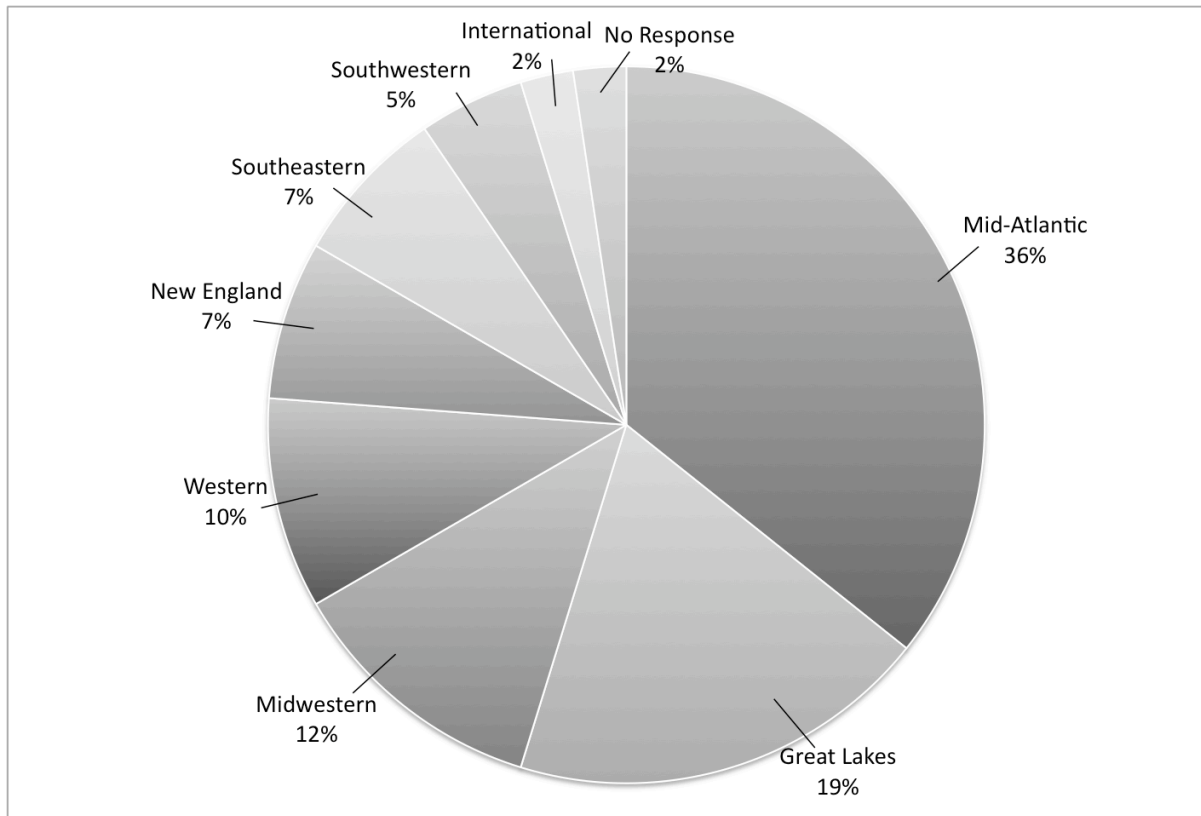


Figure 1. Percent of respondents per AMTA region, $N = 41$

Respondents reported the populations with which they currently work, selecting all populations that currently apply. Respondents selected choices from a list: (a) autism, (b) cerebral palsy, (c) Down syndrome, (d) intellectual disability, (e) physical disability, (f) Rett syndrome, (g) multiple disability, and (h) other. The “other” response provided a space to list other populations. Results indicated that 76.2% worked with individuals who have autism, 71.4% with individuals who have intellectual disabilities, 61.9% with individuals who have Down syndrome, 61.9% with individuals who have physical disabilities, 57.1% with individuals who have cerebral palsy, 52.4% with individuals with multiple disabilities, 21.4% with individuals with Rett syndrome, and 19% with “other” populations. The responses for “other” included individuals with hearing impairments, speech delays, motor delays, and

attention deficit/hyperactive disorder, older adults, hospital and medical settings, and university students.

Regarding work setting, respondents indicated all settings in which they currently work from a list: (a) school-public, (b) school-private, (c) residential facility (ICF/MR), (d) adult day program, (e) client homes, (f) music therapy office/clinic, (g) preschool, and (h) other. The response of “other” provided space to indicate the setting. Results indicated that 38.1% of respondents worked in a music therapy office/clinic. Of respondents, 26.2% reported working in a public school setting, and 26.2% in the “other” setting, which included hospital/medical settings, university setting, autism clinic, assisted living facility, and parent support group. A total of 19.0% of respondents indicated working in client homes. Of respondents, 16.7% indicated working in the settings of private school setting, as well as 16.7% reported working in a preschool setting, each. The percent of respondents working in an adult day programs was 14.3%, and 11.9% of respondents indicated working in a residential facility (ICF/MR).

Respondents indicated their clients’ use of AAC devices. Results indicated that 66.7% of respondents indicated they had clients who communicate through the use of AAC devices. However, when prompted to report what percent of clients use AAC devices, 26.2% replied that none of their clients (0%) use AAC devices. The possible responses for number of clients using AAC devices included (a) 100% (All), (b) 65-99% (Most), (c) 35-64% (Some), (d) 1-34% (Few), and (e) 0% (None). Results are indicated in Table 3.

Table 3

Percent of Clients who Use AAC Devices

% of Clients Who Use AAC Device	Frequency	Percent
None (0%)	11	26.2
Few (1-34%)	10	23.8
Some (35-64%)	10	23.8
Most (65-99%)	9	21.4
All (100%)	1	2.4

Note. $N = 41$

Regarding type of AAC device used by respondents' clients, respondents who indicated their clients used AAC devices were asked to select all types of devices that apply ($n = 28$). Choices for devices included (a) picture icons/non-electronic devices, (b) low-tech electronic devices, (c) fixed display/hybrid display electronic devices with multiple choices, (d) dynamic display electronic devices, (e) personal computer, and (f) other. The choice of "other" included a space to write in responses. Results indicated that of respondents whose clients use AAC devices, 100% have clients who use picture icons. Of this respondent group, 67.9% reported having clients who use low-tech electronic devices. Additionally, 67.9% of respondents in this group also reported having clients who use dynamic display electronic devices. Respondents in this group working with clients who use fixed display/hybrid display electronic devices was reported to be 42.9%, and 25% reported working with individuals who use personal computers as communication devices. Those who reported they work with clients who use "other" devices were 21.4% of respondents, where all responses of "other" were the iPad.

Respondents who worked with clients using AAC devices ($n = 28$) then identified the session settings in which they see clients, if they incorporated the clients' devices into the session, and the session setting in which they incorporate the devices. The choice options for

session setting were (a) individual, (b) small group, and (c) large group. Respondents selected all settings that applied. Results indicated that 85.7% of respondents worked with clients in an individual setting, and 85.7% of respondents also reported seeing client in small group settings. The percentage of respondents working with clients in a large group setting was 35.7%. Of these respondents, 92.9% reported using the clients' AAC devices in music therapy sessions. These respondents also identified session settings in which they include the clients' AAC devices, given the same choices as above. Responses indicated that 84.6% of respondents used clients' AAC devices in small group sessions, 76.9% of respondents used clients' AAC devices in individual sessions, and 26.9% of respondents used clients' AAC devices in large group settings.

Respondents who indicated they have clients who utilize AAC devices ($n = 28$) estimated the frequency in which they incorporate the AAC device. The choice selections were (a) always (100% of sessions), (b) most of the time (75-99% of sessions), (c) frequently (50-74% of sessions), (d) sometimes (25-49% of sessions), (e) rarely (1-24% of sessions), and (f) never (0% of sessions). Results indicated that 25.0% of respondents included clients' AAC devices in music therapy session most of the time (75-99% of sessions), as well as 25.0% of respondents including clients' AAC devices sometimes (25-49% of sessions). Additionally, 21.4% of respondents indicated they always incorporate their clients' devices. Results for incorporating clients' AAC devices in music therapy sessions are displayed in Table 4.

Table 4

Estimated Percent of Inclusion of Clients' AAC Devices

Inclusion of Device	Frequency	Percent
Most of the time (75-99% of sessions)	7	25.0
Sometimes (25-49% of sessions)	7	25.0
Always (100% of sessions)	6	21.4
Frequently (50-74% of sessions)	5	17.9
Never (0% of sessions)	2	7.1
Rarely (1-24% of sessions)	1	3.6

Note. $N = 28$ respondents indicated incorporating having clients who use AAC devices.

Respondents who indicated incorporating clients' AAC devices ($n = 26$) described how they incorporate devices into sessions in an open-ended question. Common themes included using AAC devices (a) to make choices, (b) to answer questions, (c) to say "hello" or "goodbye", (d) to request wants or needs, (e) to sing along to songs, (f) for social interaction, (g) to address academic and cognitive goals, (h) to practice conversation skills, (i) for fill in the blank experiences, (j) as a schedule, (k) for song writing, and (l) other uses. Three respondents had no response for this question; therefore, the percentage of respondents for this question is out of 23. Respondents included clients' AAC devices most frequently for choice making, with 52.2% indicating this use. Results indicated the second most frequent use of client AAC devices was for answering questions, with 39.1% of respondents reporting this use. Table 5 illustrates the data regarding type of use and frequency the use was reported. The average number of different uses of AAC devices in session reported per music therapist was 2.5, with a range of 1 to 5.

Table 5

Uses of AAC Devices in Music Therapy Sessions

Use	Frequency	Percent
Choice making	12	52.2
Answering questions	9	39.1
Saying hello/goodbye	5	21.7
Requesting wants/needs	5	21.7
Other	5	21.7
Singing	4	17.4
Social interaction	4	17.4
Academic/cognitive goals	3	13.0
Conversation skills	3	13.0
Fill in the blank experiences	3	13.0
Display schedules	2	8.7
Song writing	2	8.7

Note. Other included using AAC devices for instrument playing, for group leading, for self-expression, to welcome guests to a music concert, to input questions, and to facilitate instructions and cues. $n = 23$

Respondents who indicated they worked with clients who use AAC devices but do not incorporate the AAC devices ($n = 2$) into sessions discussed barriers to use in sessions. One respondent indicated that there were no barriers and that the clients were able to communicate with the therapist without use of the AAC device. The remaining respondent indicated large group sizes and lack of one to one attention were barriers to inclusion of devices in sessions.

Lastly, all respondents ($N = 42$) indicated any training they have received in using AAC devices from a list including (a) information included in undergraduate music therapy coursework, (b) information included in graduate music therapy coursework, (c) information included in graduate coursework in a related discipline, (d) in-service at work, (e) professional workshop, (f) conference session, (g) individual consultation with speech

language pathologist, (h) none, and (i) other with a space to provide a response. The most frequently reported types of training in AAC devices were the categories of in-service at work and individual consultation with speech language pathologist, each receiving 40.5% of respondents' indication. Results indicated that 31.0% of respondents reported having no training regarding AAC devices. Of respondents, 23.8% reported training through a professional workshop. Additionally, 21.4% of respondents reported "other" training on AAC devices. Other types of training included exposure at internship, co-treatment with speech language pathologist and technology staff, online research and consultation with family members/caregivers, observation of speech language pathologist and teachers, and consultation with another music therapist. Results also indicated that 21.4% of respondents received training at a conference session. A combined percent of respondents who had AAC device training during educational coursework (undergraduate music therapy, graduate music therapy, and graduate coursework in another field) included 21.4% of respondents, where 14.3% indicated training in undergraduate music therapy coursework, 4.8% indicated training in graduate coursework in another field, and 2.4% indicated training in graduate music therapy coursework. The average number of different types of training regarding AAC devices per music therapist was 1.7, with a range of 0 to 4.

In regards to respondents who work with clients who use AAC devices ($n = 28$), 85.7% of respondents reported having some type of AAC training. The most commonly reported types of AAC training included in-service at work and consultations with a speech-language pathologist, in which 57.1% of respondents indicated these types of training. The second most common types of training included professional workshops and conference sessions, in which both categories received a 32.1% response rate from respondents. Results

indicated 21.4% of respondents received training through other means, where the category of “other” included training at internship, co-treating with speech-language pathology and technology staff, online research and consultation with client’s family members, observation of speech-language pathologists and teachers, and consultation with a music therapist. Furthermore, 17.9% of respondents indicated receiving AAC training in an undergraduate music therapy course, and 14.3% of respondents indicated receiving no training on AAC. The last two categories indicated by respondents were training in music therapy graduate courses and graduate courses in other fields, each receiving 3.6% of respondents indicating these types of training.

Relationships among the data were investigated among frequency of clients who use AAC devices outside of music therapy sessions, inclusion of music therapy devices in sessions, and amount of training on AAC devices. Data for amount of training were coded according to number of types of training. A Spearman rank-order correlation was calculated to determine if a significant relationship existed among the data. No significance existed between amount of training and frequency of inclusion of AAC devices in music therapy sessions. No significant correlation existed between frequency of client use of AAC devices and amount of training on AAC devices. However, a significant positive correlation existed between frequency of clients who use AAC devices outside of music therapy and frequency of inclusion of client AAC devices in music therapy sessions ($\rho = 0.496, p = 0.01$). Furthermore, a significant positive relationship existed between amount of training and number of uses of AAC devices in sessions ($\rho = 0.426, p = 0.04$).

CHAPTER FIVE

CASE STUDY

This chapter includes the study of individual music therapy sessions held with a five-year-old girl with cerebral palsy. The case study demonstrates possible methods for including aided AAC devices in music therapy sessions, as well as acknowledged benefits and challenges of inclusion of the device.

The Client

A. was a 5 year-old girl with quadriplegic cerebral palsy. The right side of her body was the strongest, so she used this side to reach out and make selections. In the first phase of music therapy, she rode in a wheelchair, which had a removable lap tray and removable arm for her communication device. At the onset of music therapy, she used an aided AAC device, the Vantage Lite. A. communicated with this device, as well as through facial expressions and vocalizations. She was quite capable of expressing likes and preferences through a smile or high pitched, “AAAHHHH!!” when particularly excited. She had bright eyes, behind which there was a world of information to be accessed. A. attended kindergarten at a local elementary school where she was placed in a typical kindergarten class. She received some therapies at school, such as physical therapy, and other therapies outside of school, such as occupational therapy and speech-language therapy in addition to music therapy. A. had

attended these therapies through early intervention services. The Fall of 2011 was her first experience with music therapy.

A.'s immediate family included her mother and father. Her father worked in the community. Her mother had previously worked in a medical setting in the community; however, upon adoption of A., she left her job to take on the full-time job of homemaker. Her mother attended every music therapy session, sitting in the observation room adjacent to the treatment room. Her father attended sessions when his work schedule allowed, which accounted for approximately three sessions. Both took an active role in A.'s treatment and served as her most effective advocates. For A.'s current communication device, the Vantage Lite, her father welded an adaptive pointer for A. to use for the purpose of selection. This was just one example of the involvement and care of the family members.

Phase One: The Vantage Lite

At the onset of music therapy sessions, A. used the Vantage Lite as her aided AAC communication device. In this stage, the client was able to express only what was presented to her through the device, through picture symbol or communication boards, and through her facial and limited verbal expressions.

The Vantage Lite. All communication through the Vantage Lite was dependent upon the aid of another person. In order to access the device, A. needed her right arm supported. The individual who supported A.'s arm needed to provide support while still maintaining flexibility and sensitivity to the small movements. A. used the adapted T-bar pointer that her father welded, which was secured in her hand through the use of a Velcro strap, to make selections on the device. A key guard placed on the device's screen aided A. in physically making the selections on the device. When the device was set up on the wheel-chair arm, the

device was beyond A.'s arm reach. However, due to the size of her lap tray, the arm could not be moved closer.

Session Format. Weekly music therapy sessions were held at the university clinic. Sessions typically lasted approximately one hour. Each session began with a hello/check-in experience in which A. told how she was feeling that day by selecting from four picture symbols provided. Sometimes, a conversation concerning the feeling she expressed took place in attempt to gain more information. Following this experience, A. would select which activity was next. The typical activities included counting, naming animals, and instrument playing. During holidays, special activities were added to emphasize the holiday. At the close of the session, a goodbye song was sung, and A. was given the option to strum the guitar with hand-over-hand assistance to say goodbye.

Prior to each session, A.'s mother typically provided any updates concerning A.'s mood or wellness that could possible influence the session, such as A. getting over a cold or staying up late the night before. At the close of sessions, she came into the treatment room to "pack up" A. and her items (communication device, lap tray, strap, etc.). Small talk usually concerning A. took place during this time, as well. It proved to provide valuable insight into not only A.'s preferences, but also in her progress in other therapies and at school.

Meeting A. When A. and her mother came for the initial meeting, A. entered quietly, looking around at the room. Her mother was smiling and introduced both herself and A. When A. looked over at the guitar case, I asked if she like the guitar. She smiled. Her mother indicated her grandfather played the guitar and that A. smiles to indicate "yes." A.'s mother began to fill out the paperwork, and I asked A. if she liked the song *Six Little Ducks*. She smiled, and her mother replied that A. was familiar with that song and liked just about

anything. I played the guitar, and A. continued smiling. When asked if she wanted to strum the guitar, her eyes widened, and she reached out her right arm. I provided hand over hand, and we played the song together. This was the first musical interaction we had together, and it was a small glimpse into the music therapy sessions that would follow.

Once her mother finished the paperwork, A. and I finished exploring a few hand-held percussion instruments. The three of us then discussed the possible course music therapy could take. I mentioned focusing a great part of the sessions on incorporating her aided AAC device into sessions. Her mother also expressed a desire for A. to be as actively involved in the sessions as possible. When I proposed that we include instrument playing into the sessions, A. smiled and vocalized, communicating her consent. We then discussed favorite songs and musical genres A. preferred. Her mother stated A. liked just about any style of music, including Gregorian chant! Favorite genres included folk music and bluegrass, and a few of her favorite songs were mentioned, as well as a few topics and songs to avoid.

The initial meeting provided quite interesting information. I was excited to see how responsive she was to the conversations around her, as well as to her excitement toward the music. This meeting also provided a sense of anticipation in regards to what the sessions would bring.

Other professionals. Contact with other professionals was an important aspect of this treatment, particularly contact with the speech-language team. It was through this department that I was able to locate this client. The primary speech-language pathologist (SLP) with whom I spoke was a great resource. She was quite frank in her relation to others, and she had no hesitation giving her opinions concerning professional matters related to A. She was very supportive in A.'s exploration and learning, while still being down to earth.

I first met with the SLP following my initial meeting with A. and her mother. When on my way to the speech-language session, I met A. and her mother in the parking lot, and we came into the building together. A. saw me coming up to the building and gave a friendly “Ah!” greeting. When we came into the building, I met the SLP for the first time in person, and she began with a brief introduction regarding A.’s sessions. The SLP was overseeing two SLP students who had A. as a practicum client. She mentioned that A. might get excited with an extra person in the room, so she encouraged me to sit behind A. and the students. During the session, I first observed work with A. I noticed how the students worked with A. physically, assisting A. in accessing her device. Other areas I noticed were the concepts covered and the manner in which they set up the activities. During the session, A. seemed focused, maintaining concentration on her device. The two SLP students provided straightforward activities, while maintaining a light-hearted atmosphere in the room. Once the session had ended, the SLP students left to help A. get packed into her car to leave.

Following the session, the SLP supervisor (who had spent the session in the observation room) came out to talk more about the session and A. in general. After mentioning that it had been a struggle finding an appropriate device for A. to use, she further discussed this challenge. She mentioned that they had tried a device that used technology that tracked movement in relation to a dot-sticker that was placed on A.’s forehead. She mentioned that at the time, her neck strength was inadequate for this device, and that the device would pick up on reflections from glasses and lights in the room. So, after many trials, the team had decided on the Vantage Lite. However, the extent of physical assistance required by A. to use the device posed challenges in other settings.

Professional opinions. I had the opportunity to speak with a professional regarding A.'s experiences in other environments where A. spent a large amount of time. I had heard previous stories regarding resistance in this environment in relation to electronic AAC devices, so I was apprehensive as to what would come next in the discussion. The professional's discussion took a slightly different turn than I expected. She started out by mentioning that there was some resistance in this environment to using A.'s device. The professional related that the staff in this environment did not feel they got the same response from A. when using her device as the professional. This information was further expanded that the staff in this environment stated they were unable to read A.'s responses and feel her physical movements when facilitating her in using the device. However, the professional disagreed with the staff members. She believed that this was related to the staff members' resistance toward electronic AAC devices, in general. She also questioned whether the professionals in this environment truly had the client's best interests in mind. The professional seemed frustrated and aggravated at the lack of most-appropriate services for this child, a frustration I felt, as well.

When hearing this story from the professional, I had an emotional reaction. I could sense the frustration from the professional, and I began to feel disdain toward the staff members in this particular environment. I was in shock at the blatant disregard of best practices. This situation was infuriating to me, particularly how those individuals could really believe that A. was not capable of understanding or responding to the concepts presented to her. Just observing facial expressions and her reactions to others and her environment seemed to convey that there was so much going on inside of her that she needed help getting out. Also, the attitude from these individuals seemed to be that of not wanting to try to establish

communication. It is a basic right of every individual, regardless of functioning level, to establish functional communication (National Joint Committee for the Communication Needs of Persons with Severe Disabilities, 1992). These “professionals” in this environment seemed to be in violation of this basic human right. I found this information both disheartening and disenchanting. If individuals who supposedly uphold best practices have this attitude, what hope is there for clients? Rather than letting this information get me down, I took it as a challenge. I wanted to form my own opinions regarding A.’s capabilities and help her demonstrate them to others.

The sessions. Every week, A. entered the sessions smiling and vocalizing. The initial sessions were spent primarily becoming comfortable with her communication device, assisting her with the communication device, and evaluating her cognitive abilities. Each session, I was continually amazed at her capabilities. A. repeatedly surpassed my expectations in the cognitive assessment. The first weeks, new activities were brought in to evaluate academic concepts, and she would continually perform at high standards. She showed she could count by 2s, identify items by the letter at the beginning of the word, identify colors, and identify animals. Each week, she flew through the cognitive “challenges” posed to her. However, the challenge continued with her communication device.

Typically, she made a selection on her device in approximately 15-20 seconds. This wait time was required for every single item she needed to select. The typical process of selecting an item included her right arm retracting back toward her chin, her right arm relaxing down to the level of her device, her right arm extending toward the device, and then the small movement to locate the item on her device. At times, she would select an item close by the item she intended to select. However, she would remain focused, with her eye gaze on

the screen of the device. When she finally made the selection she intended originally to make, she would then look up from the device, in recognition that she had conquered the challenge. When the next item was required from her AAC device, the process would repeat.

That this entire process recurred throughout a session required much patience. I conducted experiments during the sessions to see whether music could be used in the wait time to encourage and support A. in making the selection. However, her typical response to this music was to look at the therapist, smiling, and often vocalizing, which resulted in the wait time taking longer than usual. This seemed contraindicated, so music was withheld while she made a selection, support given to her right arm, and then music resumed upon A. making her selection. A cappella songs were most typical during this stage of the process. This allowed me to facilitate A. in choice making on her device.

Activities that included A.'s device were the color song, animal song, and counting song. They remained staples throughout the phase. The typical format of these songs included a brief musical introduction followed by a verse posing a question or leaving a blank. A. then selected the appropriate response on her device to complete the verse or answer the question. Activities that took place more seasonally or included selecting instruments incorporated the use of picture icons or a communication board. The device was difficult to program, and programming had to take place in the speech-language pathologist's office. Therefore, musical instruments and the changing experiences remained on paper. The selection method used for A.'s device was still used to select the picture icons or items on a communication board, thus transferring and still practicing the skill. While this was a slow task, the hope was that with more practice in more environments and further development of upper extremity motor skills, A.'s skills in direct selection would gradually improve.

Pumpkin Stew. One particular experience that A. seemed to enjoy was “Pumpkin Stew.” This experience began during Halloween as a silly song-writing activity. A. was presented with several picture icons and asked to select items to stir into her pumpkin stew. A large plastic pumpkin was used as the “stew pot” in which A. would drop the items in to make the stew. Food items and non-food items were both included in the activity to offer a wide variety of choices for A. to make her stew just right. The Halloween theme was continued for two weeks, and the selections for the stew were always surprising. The first week the experience was used, A. selected more common “stew” items—such as cauliflower and broccoli. However, the next week, she became more creative with her selections. She chose pink paint, bat wings, and crayons! She would laugh after selecting the silly items and smile as they were thrown into the stew. At this point, a working relationship had developed between us, and we would both sit back and laugh at the stew.

Following 10 sessions, the University’s Fall semester ended, but plans were made to continue sessions the following semester. Upcoming plans for A. included a new wheelchair, riding the school bus to school, and the possibility of a new aided AAC device incorporating eye-gaze technology. With the positive changes underway, the break offered a time for integration of these new possibilities before music therapy continued.

Evaluation of the semester. Upon completion of the semester, I conducted an evaluation of the course of music therapy thus far. Reflection on the process pointed out that a majority of the challenges involved incorporating the AAC device fluidly in the sessions. Other areas of concern included the movement activity, for which a primary issue was the balance between music and AAC device. Other issues in the sessions included lack of spontaneous communication with A. She was strictly limited to using her device when

another person was able to physically support her. This was a long-term challenge, one that should be addressed by multiple professionals in multiple fields.

Phase Two: The Tobii Communication Device

Over the course of the break, A. received a new aided AAC device on a trial basis. The new device was the Tobii Communication Device. This device used eye-gaze tracking as the selection method. A. also received a new wheelchair over the break. During this phase of treatment, A. had more freedom to express herself and to take control over her environment.

Observing the new device. This semester of working with A. began with an observation of her speech-language session using the new device. The SLP professional and SLP students were still becoming familiar with the new device, but they agreed to let me sit in on this session. When I arrived, A. was not yet there for her session, so the SLP took the opportunity to fill me in on how the sessions were going with this new device. She mentioned that A. needed to work on keeping her head up and her gaze up to use the device. The SLP mentioned that this was a different skill than her previous device required, since A. was able to use her peripheral vision with the Vantage Lite, but the Tobii required direct gaze on the screen. She mentioned that they were all still becoming familiar with the device, so they were patiently hoping that everyone, the team and A., would pick up on how to effectively manipulate the Tobii. The SLP also expressed concern regarding this new device. She seemed to have a sense of urgency regarding this device, stating that it was A.'s "last hope" for effective, independent communication. Her words had a bit of skepticism to them, while still hoping that everyone would support A. in using this device.

When A. finally arrived, the SLP students quickly unpacked the device and set it up on the table. The SLP professional stayed in the treatment room, since everyone was still

becoming familiar with the device, A.'s parents moved into the observation room, and I moved to the back corner of the treatment room. When the session began, the SLP students greeted A. with enthusiasm. A. smiled at them and looked expectantly at her device. When the device had booted up, the student found the desired page, which consisted of a game where A. would uncover a background picture by looking at rectangles that covered the picture. When A. selected one of the rectangles by looking at the shape for a certain fraction of a second, the rectangle disappeared, revealing part of the picture. The activity was clearly aimed at establishing skill at using the device in a simple manner. Yet, when the activity began, the device did not seem to be picking up A.'s eye gaze. The SLP students looked at A., who was looking at the device. There was a red cursor that moved around the screen to indicate A.'s eye gaze, but the cursor was not moving around the screen. The SLP students attempted to go through settings to see whether the device was working, the eye gaze was working, or if a setting had been misadjusted. They speculated possible solutions for possible issues at the heart of the problem. However, nothing they attempted ameliorated the situation. When A's mother came into the room, she mentioned calling the Tobii representative. However, when they tried that, the representative did not answer the telephone, so the session continued with futile attempts to fix the device. The students and SLP professional seemed frustrated, frowning and making speculations concerning someone "messaging" with the settings. At the end of the session, A.'s mother seemed hopeful that the Tobii representative would call back and have a suggestion on what the issue could be and how to fix it.

Following this observation, I felt a bit apprehensive concerning my own ability to even get the device working, much less on including it in music therapy sessions! However, I did feel a slight bit of relief that even the SLP students and professional were having issues

related to the device, so if I had issues, I would know that it can happen to anyone. With this in mind, I discussed with the SLP professional some items I could work on in music therapy sessions, such as head and neck control and basic selection on the device.

Professional opinions. Speaking with a particular professional again in this phase of treatment again provided an increased insight into A.'s experience with the new device. The professional seemed to reiterate that this was A.'s "last chance" and seemed apprehensive at how the staff in another environment wanted A. have the skills to use this device right away. She mentioned that the staff in this setting did seem much more excited about this new device; however, this excitement led to the staff forming unrealistic expectations regarding the time-frame in which A. would learn to use the device. This professional seemed to have a skeptical hope that things would work out, but she still seemed concerned that this device would not work out in the end.

The sessions. During this phase of treatment, sessions took a slightly different form. While the greeting song remained the same, the movement activity was revamped from the previous phase. It now involved A. selecting the order of movements and then selecting scarf colors to wear during the activity. Once the selections were made, the movement song was sung throughout with both A. and myself performing the actions. We would tie scarves on our heads, arms, and feet, which emphasized the movements we would perform during the song. Typically, A. would squeal with delight when I tied whatever color scarf she selected onto my head and laugh as I commented on her excitement. Following the movement, A. would select the next activity from a choice of counting, animals, or instrument playing. She typically selected the animal experience next. This again involved using her device to identify the animal that corresponded to the puppet with which she was presented. With her

right arm, she would also activate a switch that had two phrases of the song recorded on it. Her device included the ability to make the animal noise by activating the animal's picture on the screen. Following this activity, depending on time, A. would either select counting or instrument playing. She typically chose to do the counting experience only when there was at least 30 minutes left in the session following the animal experience. The number experience involved counting the number of items (such as picture icons of fish) that were either added or taken away in the context of a song. She would then select the number of items from a number page on her communication device. For instrument playing, A. would indicate the instrument she wanted to play from a page of picture icons located on her device. She would then play the instrument in the context of a song, given physical assistance when needed. The session would typically end after instrument playing, where A. would strum the guitar during the goodbye song. On a couple of occasions, a songwriting/sequencing experience was included just before the instrument playing experience. This activity involved A. selecting items to include in a song-story, the song being sung, and then A. answering the questions of what happened at the beginning of the story, what happened in the middle, and what happened at the end of the story. This experience was included in the last two sessions.

Discovering A.'s personality. This new device provided A. with new freedom she had never before experienced. She had the ability to manipulate her AAC device without relying on someone else for physical assistance. Her exploration in the boundaries of this freedom became evident on the second session in which she had the device. During the animal experience, A. exited out of the animal page, and located and opened a page containing a matching game. I used a joking tone with her and stated that it was not time to play games, it was time to look for animals. She laughed, and we returned to the animal page.

The session went on without A. returning to the matching game. However, the next week before the session, A.'s mother informed me of something that happened in another setting on the previous day. A. had been doing some work with her device and decided to keep exiting out of the page chosen by the staff in this setting and opening the matching game. After this had gone on for a while, A. was placed in time-out for not following directions. Her mother related that A. cried during her time spent in time-out. My reaction to that was one of subdued accomplishment in her favor. I was so excited that she was learning this freedom, this ability to express herself and her likes/dislikes, which she had never before experienced. While I did realize that she would need to learn appropriate times to play her game, I was excited to learn of her new ability to exert some control over her environment. After learning of this preference for her matching game, I included some time at the end of sessions when we could play the matching game together. I would put the game in the context of a song and we would take turns looking for matches. She seemed to enjoy this activity, as she would laugh when it was time to begin.

Another moment when her personality came through was during the eighth session. Over the course of music therapy this semester, she had only chosen the counting experience twice. In this session, she chose the counting experience and immediately selected the number three. Taking this as a cue, I started counting with three items. When we took away two, she selected "one" when the song asked for her response. She also provided the correct number when two items were placed back on the board, by selecting "three." However, when two more items were added to the board, the experience took an interesting turn. When the song came to the pause where she would say the number, she instead exited the number page and started selecting another page from the menu. I playfully addressed her asking her to

“Hold on a minute!” and to return to the numbers page. She continued to exit the numbers page three or four more times. On her last attempt to exit the page, I waited to see what she was trying to tell me. She opened a page that listed food options for supper, and she activated the word, “Icky.” I finally understood. I looked at A. and asked, “Do you think numbers are icky?” She replied with a smile.

Her capabilities at manipulating this device continually surprised me. This last example demonstrated so much of her cognitive abilities, her personality, and her desire to communicate with others. She wanted to tell me what she thought of math and counting! Her mother informed me later that she had been exiting out of the number page continually during her speech-language session earlier that morning. We finished the counting experience with the promise of instrument playing after she told me how many items were on the board. She quickly complied, and the session moved forward.

Instrument playing. Another aspect of the sessions that has continued to be one of A.’s favorite activities was instrument playing. Every week, she saved this experience for last. When asked whether she was ready to play instruments, A. would smile and her head would perk up. Pictures of the instruments were stored on her device, so she would select the instrument she wanted to play from her device. If the instrument was one A. could manipulate independently, I would accompany her on guitar. Otherwise, I would sing the song and assist her physically, either through hand-over-hand or elbow supports. This flexibility in structure of the experience allowed for A. to participate in the most independent way possible while still receiving supports when needed. Even when hand-over-hand was provided, I asked A. how she wanted to play. Options were given, and she would respond by

smiling to indicate fast or slow and loud or soft. She typically chose to play loud and fast on the drum, laughing when this opportunity was provided.

Expressing emotions. During the greeting song, A. would sometimes indicate she was “sad” or “mad.” Investigation into these emotions was extremely difficult due to the vocabulary programmed into her communication device. There were multiple times I had to resort to yes/no questions, such as, “Are you sad about something that happened before the session?” and go from there. On one such occasion, she indicated she was sad about something that happened at school. I asked if it related to something that happened with a friend at school. A. brought up a page on her device that displayed her classmate’s names. She selected one classmate’s name two times, which I assumed to indicate that something had happened between A. and this student at school. However, what exactly happened, I was unable to decipher. The fact that A. relayed this information displayed something of the therapeutic relationship that had developed over the course of our time together and her growing ability to communicate. I just wish that there was more she could say.

Evaluation of the semester. This semester provided a new insight into A. She continually surpassed cognitive tasks, and she always had a sense of humor. There were still challenges present during the semester, such as the limitations on her vocabulary and possible malfunctions of the device.

Aside from the communication limits, the experiences this semester were better suited to meet her abilities. For example, the revised movement experience seemed to flow much better. A. was able to use her device to select the elements needed for the experience, and then the movement was aimed at improving gross motor abilities, particularly strengthening

her ability to hold up her head, which in turn positively affected her ability to use her communication device.

Maintaining flexibility over the course of the semester while still providing stability in regular experiences proved to be a key aspect in the progress of the sessions. Each session, A. knew what to expect, while still anticipating something new. Her exploration of her aided AAC device, as well as the adventure with her new freedom this device provided, opened up her ability to express her personality. This process taught me to wait and see what she was trying to tell me when she exited out of pages unexpectedly. Permitting this freedom resulted in spontaneous communication forming, which could possibly relate to the experience (such as “icky” numbers). The process of working with A. proved an incredible, growing experience, and provided me with the opportunity to trust the client in her exploration.

CHAPTER SIX

DISCUSSION AND CONCLUSIONS

This chapter integrates aspects from the survey research and the case study. This information is intended to provide a round picture of what music therapy and AAC integration can be. A discussion of the research questions from the survey will take place initially, followed by an integration of examples from the case study that illustrate particular points from the survey results. Limitations of the study will follow, and the chapter will conclude with implications for further study.

Research Questions

The purpose of this study was to discover

1. What percentage of music therapists utilized aided AAC devices in music therapy sessions with clients who already utilized AAC devices?
2. What reasons were given for not using aided AAC devices in sessions?
3. If aided AAC devices were used in sessions, how were they used?
4. What other training or support regarding aided AAC devices have music therapists received?
5. What relationships exist between inclusion of AAC devices in music therapy sessions and training in AAC devices?

In regards to the first research question, the results indicated that a majority of music therapists working with individuals who use AAC devices outside of music therapy incorporate these devices into music therapy sessions.

As demonstrated in the case study, inclusion of A.'s aided AAC device took place in every session. Although the inclusion of the device took various forms, the process evolved as the therapist and A. became more comfortable with each other, the device, and the music. The willingness of the therapist to expand and learn from other professionals, the client, and the parents allowed facilitation and inclusion of the aided AAC device in sessions to grow and adapt as the needs of the client changed.

The second research question regarded limitations to inclusion of clients' aided AAC devices. However, due to the high percentage of respondents utilizing client AAC devices, few reasons were given for limits on including AAC devices. However, they did include group size and inability to provide one-to-one assistance as barriers to inclusion.

As demonstrated in the case study, possible limitations could include physical limitations of the client requiring extensive hand-over-hand. This could lead to a therapist feeling that a choice must be made between including AAC and providing active music making. Perhaps the client is beginning the process of using an aided AAC device, so the communication is not consistent. Also, the client's aided AAC device might not include vocabulary needed in the music session. These were barriers found in the case study; however, with creative planning and aid from other professionals and parents, the limitations were found conquerable in the one-to-one setting. In the group setting, providing adequate attention and opportunity for the client to use an aided AAC device could be difficult as well. Knowledge of the device on the therapist's part could lead to strategies for successful

inclusion. Consultation with peers, parents, and other professionals would also provide useful information on inclusion of AAC devices into group settings.

Regarding the third research question of how aided AAC devices were being used in sessions, results indicated that AAC devices were being used in multiple ways in music therapy sessions. The highest reported uses included making choices, answering questions, saying “hello” or “goodbye,” requesting needs and wants, singing, and for social interaction. Music therapists have also encountered multiple types of training.

As seen in the case study, several of these functions could occur in a single session. For example, while choice making took place throughout the session in the form of selecting the next activity, selecting colors, and selecting instruments, using the AAC device for academic concepts also took place during the session. The client’s AAC device also was used for conversation purposes and providing spontaneous comments from the client. As the client’s abilities with the device changed, the functions of the device in music therapy sessions grew as well.

The fourth research questions regarded training on aided AAC devices. The majority of training occurred in worksites, including in-service at work and consultation with a speech-language pathologist. Other training most frequently reported by music therapists included professional workshop, conference session, and graduate coursework. However, almost one-third of respondents indicated having no training on AAC devices.

Training and consultation with SLP professionals and parents proved an integral part of inclusion of the AAC device in the case study. This information provided the springboard for inclusion of the device in music therapy. The SLP was able to demonstrate how the client was learning to use the device and practicing with it in speech-language sessions. The mother

was able to offer aid during the music therapy sessions when needed. These efforts provided a great resource in learning how best to facilitate the client in using the AAC device in music therapy.

The final research question regarded significant relationships within the data of the survey. A significant relationship existed between percent of clients who use AAC devices and frequency of inclusion of AAC devices in music therapy sessions, indicating that the more clients who use AAC devices that the music therapist sees, the more likely the music therapist will include the clients' AAC devices into music therapy sessions. Additionally, a significant relationship existed between number of types of training on AAC devices and number of uses of AAC devices in music therapy sessions. This information suggested that the more training a music therapist had on AAC devices, the greater number of ways the music therapist would incorporate AAC devices into music therapy sessions.

Comparison to Previous Literature

In regards to the primary research question, which was to discover what percentage of music therapists include AAC devices in music therapy sessions with clients who already utilize AAC devices outside of music therapy sessions, this study found results similar to those of Gadberry (2011). Both studies indicated that approximately half of music therapists incorporated client aided AAC devices into music therapy sessions frequently or always. However, this study found a slightly higher percentage (23.1%) of music therapists always incorporate client AAC devices in sessions than that of Gadberry (14.6%). Possible reasons for this difference in statistics could be related to the population surveyed. Gadberry looked specifically at board certified music therapists who work with individuals with autism. This study surveyed therapists who were professional members of the American Music Therapy

Association and worked with individuals with developmental disabilities. It could be possible that membership in the American Music Therapy Association results in exposure to current practice, resulting in more music therapists being aware of and incorporating client aided AAC devices into music therapy sessions.

In contrast to previous literature, this survey found that most music therapists included client's AAC devices into music therapy sessions to some extent. Gadberry's (2011) study indicated that "low numbers of music therapists" (p. 83) included AAC devices in music therapy sessions. While the exact statistic regarding Gadberry's findings was not given, this was a contrast to the results of this study.

This study found a wider variety of specific uses of aided AAC devices in music therapy sessions. Previous studies inquired about goals addressed with individuals who use AAC devices (McCarthy et al., 2008) or requested respondents to select uses from a list of options (Gadberry, 2011). The present study asked respondents to report uses in an open-ended question. However, Gadberry (2011) did provide space for write-in uses of AAC devices in sessions, which resulted with the most frequently reported "other" use to be for choice making, which corresponds to the most frequently reported use of AAC devices by this study. In contrast to this study, Gadberry found that a large portion of respondents incorporated aided AAC devices for the purpose of schedules, while this study found a small percentage of music therapists reported this use. One reason for this difference could be that Gadberry surveyed only music therapists who work with individuals with autism, while this study included music therapists who work with all populations covered under the blanket term of developmental disability. Schedules have become common practice with individuals

with autism to aid with transitions and manage behaviors (Lequia, Machalicek, & Rispoli, 2012). This could account for the difference in results between this study and Gadberry.

Similar to results found by Gadberry (2011), no relationship appeared to exist between years practicing or level of education and the incorporation of clients' AAC devices into music therapy sessions. However, in contrast to Gadberry, no relationship was found between amount of training and estimated frequency of inclusion of clients' AAC devices in music therapy sessions. This could possibly be due to the number of respondents indicating they do incorporate clients' devices into sessions.

Implications for Practice

The significant positive relationship existing between number of types of training and number of ways AAC devices are included in music therapy sessions does suggest that training could result in greater support of AAC skills for clients. This further suggests the need to address how to use AAC devices during pre-professional training for music therapists, since a majority of training occurs in the workplace. With this training during pre-professional education, music therapists would then be knowledgeable of AAC devices entering the workforce.

Collaboration and consultation with other professionals are warranted in future practice. As these provided clear benefits in the case study, working with and discussing strategies with other professionals who also work directly with the clients may result in a more well-rounded picture of the services to be provided for that individual. With this teamwork approach, the client would benefit from multiple perspectives. Also, regular contact with parents and direct caregivers is also a necessity in practice. These individuals know the client and his/her capabilities in the widest variety of settings. They also serve as

the client's best advocates, and they can provide some of the most detailed information relevant to practice regarding the individual.

Limitations

Several limitations to this study existed. The small sample size for the survey provided only a small snapshot of current practice regarding aided AAC use in music therapy. This sample was also limited to members of AMTA, thereby excluding all professional music therapists who are not members of AMTA. Due to this exclusion, the sample was limited. Trends due to membership in AMTA could be present in the data. One possible trend could be more exposure to current research, and therefore the music therapist may be more likely to include a client's AAC device in sessions.

Another limitation included the set up of the online survey. Had the question regarding barriers to AAC inclusion been answered by all respondents rather than only by respondents who indicated not incorporating client aided AAC devices into sessions, more information in relation to this research question could have been gained. This would provide more information on what music therapists identify as challenges related to incorporation of AAC devices. Given this limited information, the case study was able to supplement the data from the survey. However, this research question was largely unaddressed.

Implications for Further Study

While this study provided some insight into the current use of aided AAC devices in music therapy sessions with individuals with developmental disabilities, much remains to be known. More research regarding methods of inclusion should be conducted. This would provide valuable information regarding best practices for AAC in music therapy. Future

research could possibly compare various methods of inclusion and which methods appear to be most beneficial for clients using the devices.

Another area of future research directly related to this study would be that of barriers related to including aided AAC devices in music therapy sessions. Depending upon the results, suggestions on how to minimize the barriers to inclusion could be discovered and addressed. This would result in effective strategies for supporting a client's use of an aided AAC device.

Research regarding music therapist and client perspectives concerning inclusion of AAC devices in music therapy sessions is another area for future research. With research from the client perspective, information regarding value and importance of aided AAC inclusion in music therapy would be provided. Additionally, the client could provide insight into effectively and comfortably mixing AAC devices with music making. Having this data first hand from clients would be an invaluable resource regarding music therapy practice. From the music therapist's perspective, this research would provide a more in-depth discussion on the reasons for inclusion, methods for inclusion, limitations and successes of inclusion, and information regarding the relationship with the client when AAC is included. As research on the music therapist's perspectives on including AAC devices grow, so will the scope of research expand.

Finally, research regarding the training music therapists receive regarding AAC should be conducted. This research should include information related to most effective types of training. Once training methods are researched, training specifically related to aided AAC device inclusion in music therapy could be developed. This training could then transfer into current practice, greatly enhancing services provided to clients.

Conclusion

While previous literature regarding aided AAC device inclusion in music therapy sessions is scarce, this study provided insight into current practices. Music therapists were found to incorporate clients' AAC devices sessions in more ways when provided with a greater variety of training. Music therapists were also found to be more likely to include a client's AAC device in sessions when the music therapist worked with a higher caseload of clients who use AAC devices. These results imply that the more exposure to aided AAC devices a music therapist gains, the more likely this device will be creatively included in music therapy sessions. The case study provided a small picture into what music therapy sessions could be when AAC inclusion was a primary concern of the therapist.

This study suggests that aided AAC devices used in music therapy sessions offer more freedom to clients and provide the client with the ability for enhanced self-expression. When the client is better able to express herself, communication develops and the client's quality of life improves, as suggested in the research. Based on these results, it should be expected that music therapists include aided AAC devices in every music therapy session with a client who requires a device.

REFERENCES

- AbleNet, Inc. (2011). AbleNet. Retrieved from <http://www.ablenetinc.com/>
- American Music Therapy Association (2011). Definition and quotes about music therapy. Retrieved from <http://www.musictherapy.org/about/quotes/>
- American Speech-Language-Hearing Association. (2002). *Augmentative and Alternative Communication: Knowledge and Skills for Service Delivery* [Knowledge and Skills]. Retrieved from <http://www.asha.org/docs/html/KS2002-00067.html#sec1.2>
- American Speech-Language-Hearing Association. (2004). *Roles and Responsibilities of Speech-Language Pathologists With Respect to Augmentative and Alternative Communication: Technical Report* [Technical Report]. Retrieved from <http://www.asha.org/docs/html/TR2004-00262.html>.
- Angelo, D. H. (2000). Impact of augmentative and alternative communication on families. *Augmentative and Alternative Communication, 16*, 37–47.
- Beukelman, D. R., & Mirenda, P. (2005). *Augmentative and alternative communication: Supporting children and adults with complex communication need* (3rd ed). Baltimore, MD: Paul H. Brookes.
- Clarke, M., McConachie, H., Price, K., & Wood, P. (2001). Views of young people using augmentative and alternative communication systems. *International Journal of Language and Communication Disorders, 36*, 107–115.

- Davis, W. B. & Farnan, L. A. (2008). Music therapy with children and adults with intellectual disabling conditions. In W. B. Davis, K. E. Gfeller, & M. H. Thaut (Eds.), *An Introduction to Music Therapy Theory and Practice* (pp. 79-142). Silver Spring, MD: The American Music Therapy Association, Inc.
- Desch, L., & Gaebler-Spira, D. (2008). Prescribing assistive-technology systems: Focus on children with impaired communication. *Pediatrics*, *121*(6), 1271–1280.
- Gadberry, A.L. (2011). A survey of the use of aided augmentative and alternative communication during music therapy sessions with persons with autism spectrum disorders. *Journal of Music Therapy*, *48*, 74–89.
- Gailey, R. L., Parette, Jr., H. P., Stoner, J. B., Angell, M. E., & Carril, K. (2006). Family members' perceptions of augmentative and alternative communication device use. *Language, Speech, and Hearing Services in Schools*, *37*, 50–60.
- Hamm, B., & Mirenda, P. (2006). Post-school quality of life for individuals with developmental disabilities who use AAC. *Augmentative and Alternative Communication*, *22*(2), 134-147.
- Humpal, M. E., & Dimmick, J. A. (1995). Special learners in the music classroom. *Music Educators Journal*, *81*(5), 21–23.
- Johnston, S. S., McDonnell, A. P., Nelson, C., & Magnavito, A. (2003). Teaching functional communication skills using augmentative and alternative communication in inclusive settings. *Journal of Early Intervention*, *25*, 263–280.
- Lequia, J., Machalicek, W., & Rispoli, M. (2012). Effects of activity schedules on challenging behavior exhibited in children with autism spectrum disorders: A systematic review. *Research in Autism Spectrum Disorders*, *6*(1), 480-492.

- McCall, F., Marková, I., Murphy, J., Moodie, E., & Collins, S. (1997). Perspectives on AAC systems by the users and by their communication partners. *European Journal of Disorders of Communication, 32*, 235–256.
- McCarthy, J., Geist, K., Zojwala, R., & Schock, M. (2008). A survey of music therapists' work with speech-language pathologists and experiences with augmentative and alternative communication. *Journal of Music Therapy, 45*, 405–426.
- McLaughlin, B. (2006) Using technology, adaptations, and augmentative tools. In M. E. Humpal, & C. Colwell (Eds.), *Effective Clinical Practice in Music Therapy: Early Childhood and School Age Educational Settings* (pp.174–191). Silver Spring, MD: American Music Therapy Association, Inc.
- National Joint Committee for the Communication Needs of Persons with Severe Disabilities. (1992). *Guidelines for Meeting the Communication Needs of Persons with Severe Disabilities* [Guidelines]. Retrieved from <http://www.asha.org/docs/html/GL1992-00201.html#sec1.3.2>
- Odom, S. L., Horner, R. H., Snell, M. E., & Blacher, J. B. (2007). The construct of developmental disabilities. In S. L. Odom, R. H. Horner, M. E. Snell, & J. B. Blacher (Eds.), *Handbook of developmental disabilities* (pp. 3-15). New York, NY: The Guilford Press.
- Smith, M. M., & Connolly, I. (2008). Roles of aided communication: Perspectives of adults who use AAC. *Disability and Rehabilitation: Assistive Technology, 3*, 260–273.
- Soto, G. (1997). Special education teacher attitudes toward AAC: Preliminary study. *Augmentative and Alternative Communication, 13*, 186-197.

- Stoner, J. B., Angell, M. E., & Bailey, R. L. (2010). Implementing augmentative and alternative communication in inclusive educational settings: A case study. *Augmentative and Alternative Communication, 26*, 122–135.
- Thaut, M. H., Mertel, K. M., & Leins, A. K. (2008). Music therapy for children and adults with physical disabilities. In W. B. Davis, K. E. Gfeller, & M. H. Thaut (Eds.), *An Introduction to Music Therapy Theory and Practice* (pp. 79–142). Silver Spring, MD: The American Music Therapy Association, Inc.
- Valiquette, C., Sutton, A., & Ska, B. (2010). A graphic symbol tool for the evaluation of communication, satisfaction and priorities of individuals with intellectual disabilities who use a speech generating device. *Child Language Teaching and Therapy, 26*, 303–319.
- Wickenden, M. (2011). Talking to teenagers: Using anthropological methods to explore identity and the life worlds of young people who use AAC. *Communication Disorders Quarterly, 32*, 151–163.

APPENDIX A
SURVEY TOOL

Survey

1. What is your music therapy credential or designation?
 - a. MT-BC
 - b. RMT
 - c. ACMT
 - d. CMT
 - e. Other _____

2. How many years have you been a music therapist practicing in the field?

3. How many years have you worked specifically with individuals with developmental disabilities?

4. What levels of education have you completed? (Check all that apply)
 - a. Bachelor's degree in Music Therapy
 - b. Bachelor's degree in another field
 - c. Equivalency in Music Therapy

- d. Master's degree in Music Therapy
 - e. Master's degree in a another field (please specify) _____
 - f. Doctoral degree in Music Therapy
 - g. Doctoral degree in another field
5. In which AMTA region do you currently practice music therapy?
- a. Great Lakes
 - b. Mid-Atlantic
 - c. Midwestern
 - d. New England
 - e. Southeastern
 - f. Southwestern
 - g. Western
 - h. International
6. Indicate the populations with whom you currently work. Check all that apply.
- Autism
 - Cerebral palsy
 - Down syndrome
 - Intellectual disability
 - Physical disabilities
 - Rett syndrome
 - Multiple disabilities

- Other (please specify) _____
7. Check the settings in which you currently work. Check all that apply.
- School-public
 - School-private
 - Residential facility (ICF/MR)
 - Client homes
 - Music therapy office/clinic
 - Preschool
 - Adult day program
 - Other (please specify) _____
8. Augmentative and alternative communication (AAC) is a means to replace or supplement natural communication through the use of symbols (ASHA, 2002). The process of aided communication involves the use of a device from which symbols are transmitted or received (ASHA, 2004). This may be through an electronic device or non-electronic device. This does NOT include sign language or gestures. Do any of your current clients communicate through the use of aided AAC devices outside of music therapy sessions?
- a. Yes
 - b. No

9. Approximately what percentage of your clients use aided AAC devices outside of music therapy?

- a. 100% (All)
- b. 65%-99% (Most)
- c. 35%-64% (Some)
- d. 1%-34% (Few)
- e. 0% (None)

10. Related to Question 9, what types of aided AAC devices do your clients use? Check all that apply.

- Picture icons/Non-electronic devices (PECs, Communication boards, Communication books, etc.)
- Low-tech electronic devices (BIGmacs, LITTLEmacs, switches, etc.)
- Fixed display/Hybrid display electronic devices with multiple choices (TechTalk, CheapTalk, Chatbox, etc.)
- Dynamic display electronic devices (DynaVox, Vantage Lite, Springboard, etc.)
- Personal computer
- f. Other (please specify) _____

11. In which setting do you see clients? Check all that apply.

- Individual
- Small group (2-8)

_ Large group (9 or more)

12. Do you incorporate the client's aided AAC device into music therapy sessions?

- a. Yes
- b. No

13. If "no" answered to Question 12, what barriers are there to the use of the client's aided AAC device in sessions? (open ended)

14. If "yes" to Question 12, in what ways do you incorporate the device into sessions? (open ended)

15. If "yes" to Question 12, how often do you estimate inclusion of the device in sessions?

- a. Always (100% of sessions)
- b. Most of the time (75-99% of sessions)
- c. Frequently (50-74% of sessions)
- c. Sometimes (25-49% of sessions)
- d. Rarely (1-24% of sessions)
- e. Never (0% of sessions)

16. If "yes" to Question 12, in which settings do you incorporate the device? (Check all that apply)

- a. Individual
- b. Small group (2-8)
- c. Large group (9 or more)

17. What training in aided AAC have you had? Check all that apply.

- Music therapy undergraduate coursework included information on aided AAC use
- Graduate music therapy coursework included information on aided AAC use
- Graduate coursework in a related discipline included information on aided AAC use
- In-service at work
- Professional workshop
- Conference session
- Individual consultation with speech language pathologist
- None
- Other (please specify) _____

APPENDIX B

EXAMPLES OF COMMUNICATION DEVICES

Non-electronic AAC Devices

Figure 2. Examples of picture icons from Boardmaker software by Meyer-Johnson

Switch Devices

Figure 3: LITTLEmac ® by Ablenet



Figure 4. BIGmac ® by AbleNet

Fixed Display Devices



Figure 5. TechTalk by Meyer-Johnson

Dynamic Display Devices



Figure 6. DynaVox by DynaVox Systems



Figure 7. Vantage Lite by Prentke Romich

Hybrid Display Device



Figure 8. Chatbox by Prentke Romich

VITA

Sarah Roberts was born in Jackson, Tennessee. She is the daughter of Craig and Barbara Roberts. Upon graduating from high school, she received her undergraduate education at the University of Tennessee at Martin with a bachelor's degree in music education in May of 2008. In the fall of 2008, Sarah entered the equivalency/master's program for music therapy at Appalachian State University. At Appalachian State University, she accepted a graduate research assistantship with Dr. Jennifer Snodgrass. Finishing her internship at Matheny Medical and Educational Center in New Jersey in 2010 completed her equivalency education. In the spring of 2011, Sarah returned to Appalachian State University to complete her master of music therapy degree. In March of 2011, she passed her board exam to become a board certified music therapist. While working on the master of music therapy degree, she had the opportunity to work as a graduate assistant to Dr. Cathy McKinney.

Following graduation from Appalachian State University, Sarah plans to pursue a career as a music therapist working with individuals with developmental disabilities.