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# Assessing Speech-Language Pathologists' Knowledge and Use of Language Acquisition through Motor Planning

Mary Catherine Cazalas

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ASSESSING SPEECH-LANGUAGE  
PATHOLOGISTS' KNOWLEDGE AND  
USE OF LANGUAGE ACQUISITION  
THROUGH MOTOR PLANNING

The University of Southern Mississippi

Assessing Speech-Language Pathologists' Knowledge and Use of Language  
Acquisition through Motor Planning

by

Mary Catherine Cazalas

A Thesis  
Submitted to the Honors College of  
The University of Southern Mississippi  
in Partial Fulfillment  
of the Requirement for the Degree of  
Bachelor of Arts  
in the Department of Speech and Hearing Sciences

May 2018

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**Abstract**

Many individuals who are nonverbal require augmentative and alternative communication devices to communicate. The purpose of this research was to assess speech-language pathologists' knowledge of a particular method of implementing augmentative and alternative communication devices known as language acquisition through motor planning (LAMP). Further, this research was designed to determine the percentage of speech pathologists who have used LAMP during their careers as well as the perceived level of success speech pathologists have found with LAMP. Mississippi speech-language pathologists were used as the sample for this study. A survey was created electronically via the online survey development software, "Survey Monkey," and distributed electronically via email. A total of forty-two speech pathologists responded to this survey. The data from the survey provided information regarding speech pathologists' knowledge of LAMP, the prevalence of its use, the populations with which speech pathologists have used LAMP, and the perceived degree of success speech pathologists have found with LAMP.

Keywords: augmentative and alternative communication, language acquisition through motor planning, speech-language pathologists, nonverbal

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**List of Abbreviations**

AAC	Augmentative and Alternative Communication
ASHA	American Speech-Language-Hearing Association
DTT	Discrete Trial Training
IRB	Institutional Review Board
LAMP	Language Acquisition through Motor Planning
MLU	Mean Length of Utterance
MSHA	Mississippi Speech-Language-Hearing Association

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**Chapter 1: Introduction**

Many children that are affected with complex language disorders have limited verbal capabilities or are completely nonverbal; therefore, they may depend on augmentative and alternative communication (AAC) as their primary means of communication. The American Speech-Language-Hearing Association (ASHA) defines AAC as “an area of clinical practice that addresses the needs of individuals with significant and complex communication disorders characterized by impairments in speech-language production and/or comprehension, including spoken and written modes of communication” (*Augmentative and Alternative Communication*, “Overview” paragraph). ASHA goes on to say that “AAC is augmentative when used to supplement existing speech and alternative when used in place of speech that is absent or not functional” (*Augmentative and Alternative Communication*, “Overview” paragraph). The need for AAC is not one that is just now emerging. AAC arose in the 1950s and 1960s as a means of communication for individuals who had not developed spoken language skills (Hourcade, 2016). Since the mid-twentieth century, AAC has evolved, progressed, and is becoming increasingly more common. According to ASHA, over two million individuals in the United States have a communication disorder that has impaired, or eliminated, their ability to speak. An individual’s impaired communicative abilities can result from congenital causes, acquired causes, or degenerative causes (*Information for AAC Users*, “AAC Users” paragraph). Since young children are less likely to have impaired communication resulting from a degenerative or acquired condition, most of their

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communication impairments are due to congenital conditions. According to ASHA, because children with intellectual disabilities are learning language via AAC devices and implementation strategies, “for this population, AAC not only represents existing language, but also is a tool to aid in expressive and receptive language acquisition and literacy development” (*Augmentative and Alternative Communication*, “Key Issues” paragraph). Just as verbal children learn to communicate by using the repeated motor patterns of their articulators to practice speech sounds, nonverbal children must also be able to practice their communication skills if they are ever to become effective communicators. Therefore, AAC is vital to these individuals. One population in which communication impairments are particularly common is that of individuals with autism. The Center for AAC and Autism states that one out of every sixty-eight children in the United States has an autism diagnosis and about fifty percent of these children have impaired verbal communication (*The Center for AAC and Autism*, “AAC and Autism” paragraph).

Due to the growing need for AAC among individuals with autism, an AAC implementation strategy was developed specifically for this population. Language acquisition through motor planning (LAMP) is an AAC implementation strategy designed to teach children who are nonverbal or who have impaired verbal capabilities to communicate using AAC. The Center for AAC and Autism states: “LAMP is a therapeutic approach based on neurological and motor learning principles. The goal is to give individuals who are nonverbal or have limited verbal abilities a method of

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independently and spontaneously expressing themselves in any setting” (*The Center for AAC and Autism*, “What is LAMP” paragraph). The LAMP approach was initially developed for nonverbal children with autism; however, it has proven to be successful among individuals with a variety of disabilities and communicative impairments (Halloran, 2006). The elements of LAMP are as follows: readiness to learn, joint engagement, unique and consistent motor plans, auditory signals, and natural consequences (Halloran & Halloran, 2015).

**Readiness to Learn**

This first element of LAMP refers to whether or not the individual is in a state that is conducive to learning. For example, the learner should be in a state of arousal that allows for him or her to attend to the task at hand. The child’s state of arousal should be “at a moderate level to be able to orient, discriminate, attend, explore, interact, and learn” (Halloran & Halloran, 2015, p. 4). This means that the child should not be too stimulated or not stimulated enough when the learning experience is taking place. Another factor that plays into a child’s readiness to learn is the difficulty level of the activity that he or she is participating in. If an activity is too easy, the child will not learn new skills and will lose interest. However, if an activity is too difficult, the child will become frustrated when he or she does not experience success. When the individual knows that a goal can be achieved, he or she “will put forth more effort and energy, will initiate and persist in tasks even if they are challenging” (Halloran & Halloran, 2015, p. 7).

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## **Joint Engagement**

Halloran and Halloran (2015) define joint engagement as two individuals simultaneously participating in an activity. Adamson, Bakeman, Deckner, and Ronski (2008) state that early language development and the development of joint attention and engagement skills are typically related. However, developmental disabilities have been shown to have an adverse effect on the relationship between joint attention/engagement and language development (Adamson, Bakeman, Deckner, & Ronski, 2008). Individuals with autism characteristically demonstrate impairments with joint attention and joint engagement; however, “the link between joint engagement and language development is documented across populations” (Halloran & Halloran, 2015, p. 11). Because joint engagement is such an integral component of language-learning, LAMP is child-centered, meaning that the child directs the learning experience based on his or her interests. Child-directed learning allows for increased motivation and engagement in the activity (Halloran & Halloran, 2015).

## **Consistent and Unique Motor Plans**

A motor plan is “a set of muscle commands that are structured before a movement begins” (Halloran & Halloran, 2015, p. 17). For example, when a verbal individual speaks, he or she does not have to actively concentrate on how to move his or her articulators to produce sounds because these movements are so ingrained that they become automatic. Although AAC users do not use their articulators to communicate, they are still able to create consistent motor plans using their AAC systems. LAMP focuses on consistent and unique motor plans, meaning that a specific motor movement

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always yields the same result, which allows the learner to achieve motor automaticity (Halloran & Halloran, 2015). Once a child learns a motor movement for a particular word, this movement will always remain the same so that he or she will eventually be able to locate the word automatically, resulting in communicative fluency (Halloran & Halloran, 2015).

### **Auditory Signals**

The auditory signal aspect of LAMP coincides with unique and consistent motor plans. In LAMP, auditory feedback is paired with a consistent motor plan, which “may play a role in auditory processing and language development” (Halloran & Halloran, 2015, p. 29). When the learner uses a consistent and unique motor plan to press a key on the AAC system, auditory feedback should be immediate so that he or she will make the connection between the motor plan and the feedback.

### **Natural Consequences**

When teaching LAMP, it is crucial to the learning experience that the speech pathologist, parent, teacher, or other professional, provide an appropriate, animated response immediately following each utterance the child makes with the AAC system. Doing so allows the learner to attach meaning to the words that are produced (Halloran & Halloran, 2015). For example, if the child presses the icon for “cookie,” the communication partner should immediately respond by providing the child with a cookie or by taking a bite of a cookie, or with any other appropriate response.

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When all working in conjunction, readiness to learn, joint engagement, consistent and unique motor plans, auditory signals, and natural consequences allow the learner to use the AAC system to form language connections.

While studies have shown that LAMP has been successful in improving communicative abilities in nonverbal children, there is little research indicating how frequently this approach is used in the field of speech-language pathology. For this reason, in my research, I hope to determine the level of knowledge speech-language pathologists in Mississippi have of LAMP, whether or not they are using LAMP, and if so, with whom they are using it and the perceived degree of success they have found with it.



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**Chapter 2: Literature Review**

While there are currently no studies that focus specifically on speech pathologists' use of LAMP, there has been research conducted on the effectiveness of LAMP. The purpose of this literature review is to discuss the effects of LAMP on individuals' communicative abilities as shown in previous studies as well as to discuss several other AAC implementation strategies.

**Language Acquisition through Motor Planning**

In recent years, several studies have been performed that tested the effectiveness of LAMP therapy on improving the communication of AAC users. Bedwani, Bruck, and Costley conducted a study in 2015 regarding the effects of LAMP on the communication of children with autism. The sample for this study consisted of eight children with autism who had limited verbal communicative abilities. Prior to the beginning of the study, parents and teachers of the participants received training regarding LAMP and the AAC device that the children would be using—in this case a Vantage Lite device. The speech pathologist assessed the participants at three points during the study: before the LAMP training began, five weeks into the LAMP training period, and again after a two-week period of no assistance from the speech pathologist. Results showed that during the treatment period, all eight participants improved in the area of spontaneous communication (Bedwani, Bruck, & Costley, 2015). Spontaneous communication can be defined as “communicative behaviors that occur in the absence of prompts, instructions or other verbal cues” (Duffy & Healy, 2011, p. 977). Follow-up interviews were conducted with parents of seven of the eight participants two years after the completion

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of the study. The interviews revealed that five out of the seven children continued to use LAMP with the Vantage Lite device. As for those that did not continue to use their device, the primary reason was a lack of continued professional support. (Bedwani, Bruck, & Costley, 2015). This study indicates that LAMP with AAC was successful in improving spontaneous communication for the participants when paired with the proper support from professionals.

In another study conducted by Potts and Satterfield, seven children with autism were studied to determine the effects of using LAMP to implement a speech generating device as well as the effects of LAMP on the mean length of utterances (MLU) of each child. Each child was given a speech generating device and received LAMP therapy over the span of one year. The participants' communication skills were evaluated at the beginning and end of the study. These evaluations indicated that each participant had made communicative progress. The participants made gains in both expressive and receptive language as well as MLU (Potts & Satterfield, 2015). Again, LAMP was successful in improving the communicative abilities of children with autism.

A master's dissertation written by Mary Pulliam examines the effects of using LAMP with an AAC device on the communication of one child with autism. When the study began, the child was nonverbal. The child was studied from the age of four to the age of ten, broken up into four treatment phases: baseline, first treatment, baseline, and second treatment. Over the course of the study, two different AAC devices were used; however, the differences were only cosmetic. LAMP therapy was used with the AAC devices and the child was videotaped using the device during therapy sessions in each of

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the four phases. Following each session, a trained observer watched the videos and collected data by using a behavior checklist, which was used to determine the number of communicative acts that the child engaged in. The findings showed that over the course of the study, communicative acts per obligatory context per minute increased from 0.38 to 1.08. The percentage of total gestures increased from 0% at the beginning of the study to 10.1% at the completion of the study. The percentage of communicative acts produced via AAC decreased from 100% at the first baseline to 67.7% at the second treatment phase; however, the percentage of verbalizations increased from 0% at the first baseline to 27.7% at the second treatment phase. In addition, the participant also expanded his vocabulary throughout the study (Pulliam, 2010). These results suggest that using AAC along with LAMP improved the participant's ability to communicate both with the AAC device and verbally.

### **Alternative Methods**

Although LAMP is gaining attention in the field of AAC, it is not the only method of implementing AAC with individuals that have impaired communicative abilities. It is important to note that there is no "right" or "wrong" implementation strategy because there is no single method that will work for each individual. It is the job of the speech pathologist to determine the method that will work best for each of his or her clients.

### *Naturalistic Training*

One alternate category of AAC interventions is naturalistic teaching. Naturalistic strategies are typically used for teaching aided communication skills and "include revolving instruction around the child's interests, following the child's lead, modeling the

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communication frequently, prompting the child's communication, using natural consequences during teaching, and keeping up with interaction between the child and the interventionist" (Giangrasso, 2015, p. 13). One form of naturalistic training is milieu therapy. The main focus of milieu therapy is conducting language teaching in the child's natural environment and its major goals are making language functional before focusing on linguistic forms and combining the "talking environment" and the "training environment" (Canosa, 1994, p. 6). Milieu therapy is used to teach AAC in a child's natural environment in hopes that it will help the child generalize the use of AAC across environments instead of exclusively in the therapy setting. In 1994, Roslyn Canosa performed a study in which she trained four teachers in milieu therapy and then had these teachers implement these strategies with their students with disabilities who used AAC. Pre-intervention and post-intervention language samples of the students that received milieu training revealed overall increases in language use in all of the children (Canosa, 1994). While other naturalistic training techniques exist, milieu therapy is one of the better-known treatment options; therefore, it is the only one that will be discussed in this section.

### *Discrete Trial Training*

Discrete Trial Training (DTT) is a method that is commonly used to teach language and communication to individuals with autism; therefore, it is often used when teaching these individuals to use AAC. In DTT, "skills are separated into simple steps and each step is taught by means of repetitive trials" (Onur, 2011, p. 1437). In a 2012

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study by Armstrong, McLaughlin, Clark, and Neyman, a preschool-aged female with autism was studied while learning to use an AAC device (Flip 'n Talk) through DTT. Throughout each training session, the child was taught a new icon on the device and how to use the icon effectively through DTT. Results showed that within three sessions, the child's requests for assistance increased from 0% to 90%, mastery of the concept of "all done" was maintained for four sessions, requests for "more" increased from 0% to 87.5%, and she achieved an average of 93.3% mastery for using the word "yes" (Armstrong, McLaughlin, Clark, & Neyman, 2012). While these results indicate that DTT had a positive impact on the child's communication, the child only learned a few words; therefore, alternative methods may be more effective for expanding an individual's vocabulary as well as making communication functional.

### *Peer Modeling*

From a very early age, children seem to be fascinated with their peers. For example, it is not uncommon to observe two babies staring at each other if they are in a room together. In 2009, Trembath, Balandin, Togher, and Stancliffe performed a study that investigated the effects of peer-modeling when teaching preschool-aged children with autism to communicate using AAC devices. Six typically developing preschoolers were taught to use peer-mediated teaching with their classmates with autism. During three sessions with three classmates with autism, the typically developing children utilized peer-modeling techniques with and without a speech generating device. This was done in three different preschools. The results showed that all three children with autism increased their communication after the interventions with their typically developing

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classmates; however, only one child maintained this increase in communication (Trembath, Balandin, Togher, & Stancliffe, 2009). From these results, it can be inferred that peer-mediated treatment can be effective if executed correctly, although the fact that only one child maintained the increase in communication may indicate that this may not always be the best training strategy. While each of these AAC implementation strategies have yielded success, no two are created equal and a technique that works for one child may not work for every child. This is true for LAMP as well as any other methods. Based on the research I have conducted on this topic, it appears that LAMP is the only technique that was designed specifically for the purpose of implementing AAC. If this is the case, perhaps LAMP should be the primary method that speech-language pathologists use when teaching a child to use AAC. This leads back to the initial question of whether or not speech-language pathologists are using LAMP. I have found no research indicating the percentage of professionals that use LAMP. For this reason, I wish to determine the level of knowledge speech-language pathologists in the state of Mississippi have regarding LAMP and whether or not they are using or have used LAMP when implementing AAC with their clients. If they have used LAMP, I hope to determine with whom they have used it, and the perceived level of success they have found with it.

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**Chapter 3: Methods**

**Sample**

The sample for this study consisted of speech-language pathologists who practice in the state of Mississippi. The sample of speech-language pathologists was obtained via the Mississippi Speech-Language-Hearing Association (MSHA). In order to participate in the study, the speech pathologists were required to have their certificate of clinical competence in speech-language pathology.

**Procedures**

My adviser and I created a survey using "SurveyMonkey," an online survey development software. Once the survey was complete, I applied for approval from the University of Southern Mississippi's Institutional Review Board (IRB). Approval was granted, and I began the process of distributing the survey. I emailed the survey to the current MSHA president and received her permission to distribute the survey to MSHA members. The MSHA president sent the survey to MSHA's executive director who then emailed it to all members. I also emailed the survey to the head of the University of Southern Mississippi's Speech and Hearing Department as well as the interim director of the DuBard School for Language Disorders, requesting that they share it with their faculty and staff. Responses to the survey were anonymous and sent directly back to me via "SurveyMonkey." The first page of the survey was a participant consent letter. After reading the letter, the choice of the participants to continue with the survey was indication of their consent to participate.

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**Design**

The data collected from this survey was used to determine how knowledgeable speech-language pathologists in Mississippi are about LAMP, whether or not they are using LAMP, and if so, the level of success they have found with it. The survey consisted of eight multiple choice questions.

*Survey items:*

1. How long have you been a practicing speech-language pathologist?
  - a. Less than 1 year
  - b. 1-5 years
  - c. 5-10 years
  - d. 10-20 years
  - e. More than 20 years
2. In what setting do you primarily practice?
  - a. Hospital
  - b. Education/Schools
  - c. Private Practice
  - d. Nursing Home
  - e. College/University
  - f. Residential Healthcare Facility
  - g. Nonresidential Healthcare Facility
  - h. Other (please specify)
3. Rate your knowledge of Language Acquisition through Motor Planning (LAMP)
  - a. No knowledge
  - b. Minimal knowledge
  - c. Somewhat knowledgeable
  - d. Very knowledgeable
4. During your career, have you ever worked with an individual who communicates by using augmentative or alternative communication?
  - a. Yes
  - b. No
5. During your career, have you ever used LAMP with an individual who communicates by using augmentative or alternative communication?
  - a. Yes
  - b. No
6. With which population(s) have you used LAMP? (select all that apply)



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- a. Autism
  - b. Cerebral Palsy
  - c. Intellectual Disability
  - d. Aphasia
  - e. Genetic Disorders
  - f. Cerebrovascular Accident
  - g. Traumatic Brain Injury
  - h. Neurodegenerative Diseases
  - i. Other (please specify)
7. To what degree have you found success with LAMP?
- a. Unsuccessful
  - b. Very little success
  - c. Somewhat successful
  - d. Very successful
8. Would you recommend LAMP to a fellow speech-language pathologist?
- a. Yes
  - b. No

**Variables**

In this study, the dependent variables are the perceived levels of knowledge of LAMP among speech-language pathologists as well as the perceived degrees of success speech-language pathologists have found with LAMP. The independent variable is the number of speech-language pathologists that have knowledge of LAMP and/or have used LAMP at any point in their careers.

**Data Analysis**

Data for this study came in the form of the speech pathologists' responses to the survey items. The quantitative analysis consisted of counting the different responses to each of the multiple-choice questions and compiling the responses into the form of graphs. The qualitative analysis involved reading and comparing notes left in the "comments" section of the survey.

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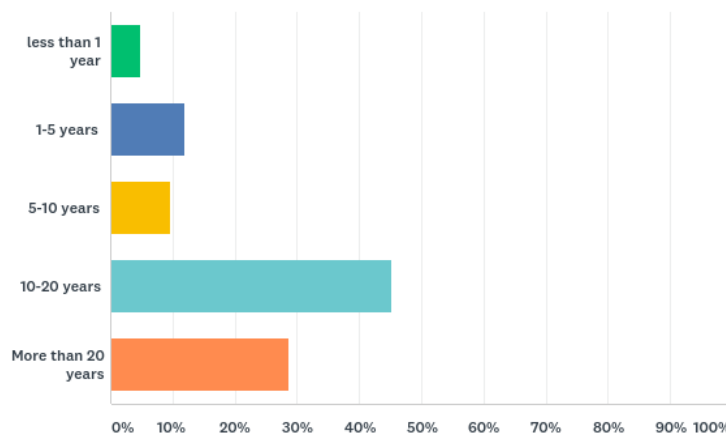
**Chapter 4: Results**

A total of forty-two speech-language pathologists completed the survey. The majority of speech-language pathologists indicated that they have knowledge of LAMP and about half of them have used LAMP at some point in their career. Of the respondents that have used LAMP, all of them indicated that they found some degree of success with LAMP and nearly all would recommend it to a fellow clinician. Listed below are the results of each survey item.

*Item 1: How long have you been a practicing speech-language pathologist?*

Of the forty-two speech-language pathologists that responded to this item, two (4.76 %) have been practicing for less than a year, five (11.9%) have been practicing between one and five years, four (9.52%) have been practicing between five and ten years, nineteen (45.24%) have been practicing between ten and twenty years, and twelve (28.57%) have been practicing for over twenty years.

*Figure 1: Years Practicing*

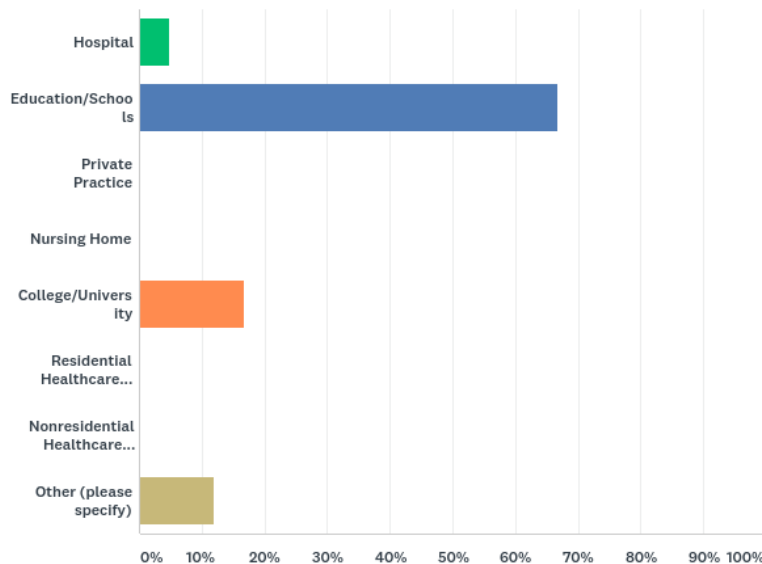


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*Item 2: In what setting do you primarily practice?*

Of the forty-two respondents to this question, twenty-eight (66.67%) primarily practice in schools. Other settings of practice included: colleges or universities (16.67%) and hospitals (4.76%). Of the five respondents that indicated “other,” one is retired from a university, one works in an early intervention clinic, one works in a facility for individuals with developmental or intellectual disabilities, one works in an outpatient rehabilitation clinic, and one works in an out-client school setting.

*Figure 2: Setting of Practice*



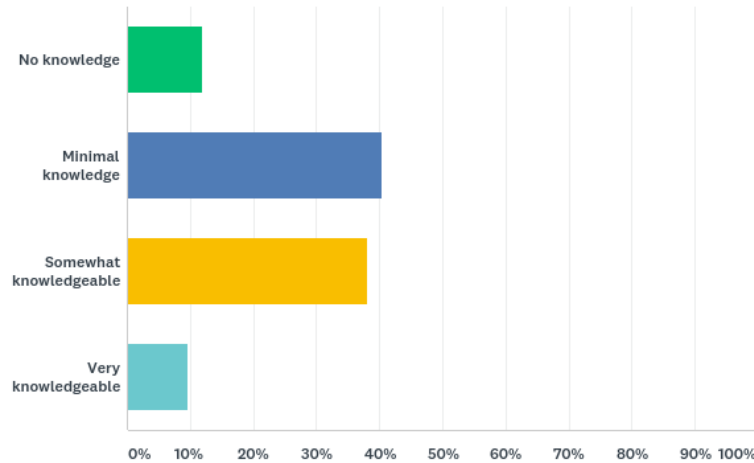
*Item 3: Rate your knowledge of LAMP:*

Only five respondents (11.9 %) indicated that they have no knowledge of LAMP. The remaining speech pathologists indicated that they have some degree of knowledge of

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LAMP, with seventeen (40.48%) having minimal knowledge, sixteen (38.1%) being somewhat knowledgeable, and four (9.52%) being very knowledgeable.

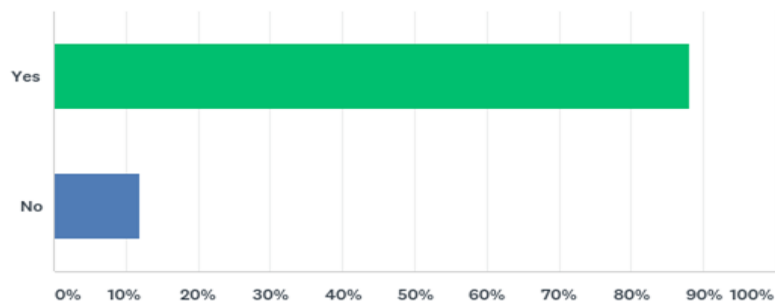
Figure 3: Knowledge of LAMP



*Item 4: During your career, have you ever worked with an individual who communicates by using augmentative or alternative communication?*

All forty-two participants responded to this item. The vast majority (88.1%) have worked with an individual who communicates using AAC, while 11.9% of participants have not.

Figure 4: Usage of AAC with Clients

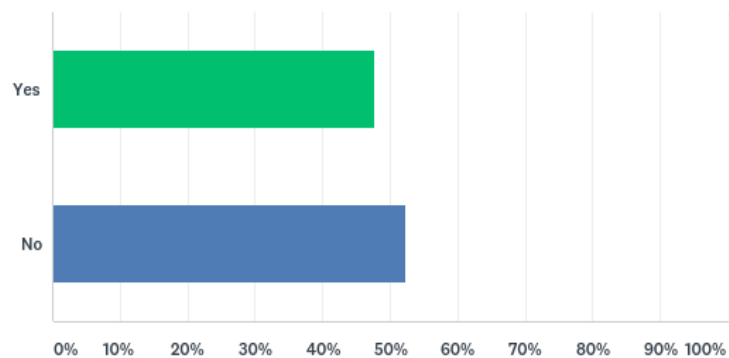


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*Item 5: During your career, have you ever used LAMP with an individual who communicates by using augmentative or alternative communication?*

The forty-two responses to this item were nearly split in half. Twenty respondents (47.62%) indicated that they have used LAMP with a client who uses AAC as a means of communication. The other twenty-two respondents (52.38%) have no experience using LAMP with a client. After responding to this item, the twenty participants who have used LAMP were directed to the next question, while the twenty-two participants who have no experience with LAMP were directed to the end of the survey.

*Figure 5: Usage of LAMP with Clients*



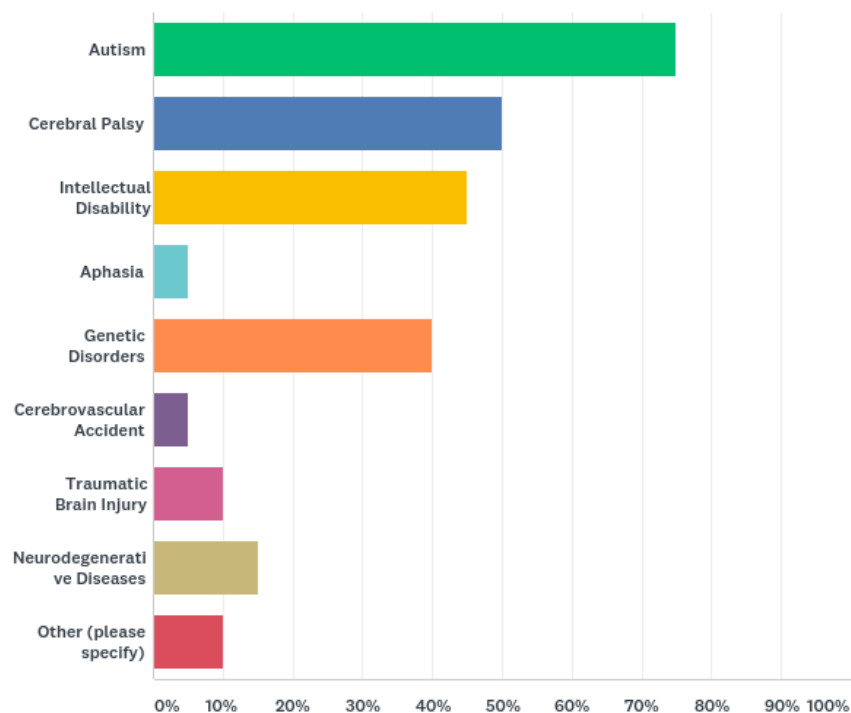
*Item 6: With which population(s) have you used LAMP?*

This survey item allowed the speech-language pathologists to select all populations that they have used LAMP with. The category of autism had the most responses, with fifteen of the twenty-two respondents (75%) indicating that they have used LAMP with this population. Ten respondents (50%) have used LAMP with individuals with cerebral palsy and nine respondents (45%) have used LAMP with

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individuals with intellectual disabilities. Eight participants (40%) used LAMP with individuals with genetic disorders, three participants (15%) have used it with clients with neurodegenerative diseases, and two (10%) used it with patients with traumatic brain injuries. The categories of aphasia and cerebrovascular accident both had a single speech pathologist indicate that they have used LAMP with these populations. Two participants filled out the “other” category. One speech-language pathologist indicated that he or she has used LAMP with clients with childhood apraxia of speech and the other indicated that he or she has used LAMP with clients who are nonverbal.

Figure 6: Populations



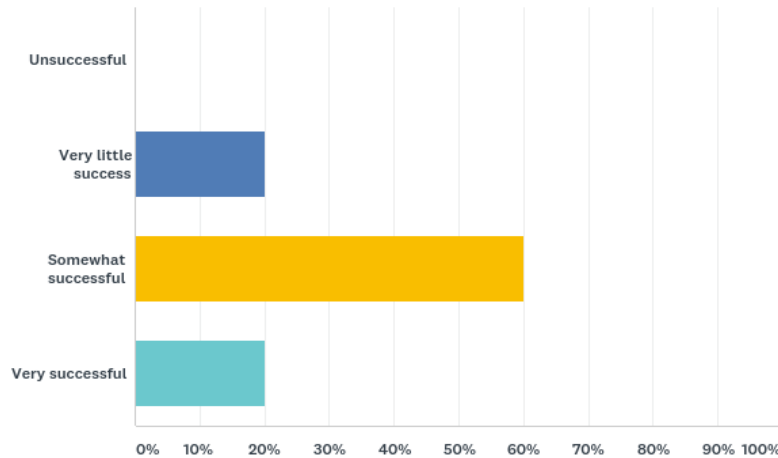
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*Item 7: To what degree have you found success with LAMP?*

Of the twenty-two participants that answered this question, all of them indicated that they have experienced some degree of success with LAMP. Four participants (20%) indicated that they have experienced very little success, twelve participants (60%) have found LAMP to be somewhat successful, and the remaining four participants (20%) have found it to be very successful. An area for comments was included with this item and five of the respondents provided a comment. One speech pathologist who indicated that he or she has experienced very little success with LAMP commented that because he or she works with young children, it is difficult to monitor long-term success; however, upon following up with some clients once they have entered the school system, the speech pathologist found that the student was often not using his or her AAC device. Another respondent stated that a lack of parental involvement affects the progress of clients. Similarly, another speech pathologist commented that there is “minimal parent and teacher buy in and not enough classroom support” for children using AAC devices. A respondent who has found LAMP to be somewhat successful commented that he or she uses a modified version of LAMP that utilizes a different modality for the comprehension of language. Another respondent who found LAMP to be somewhat successful stated that “it is very successful if everyone in the child’s life buys into it and uses it continuously.”

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Figure 7: Degree of Success



## Item 8: Would you recommend LAMP to a fellow speech-language pathologist?

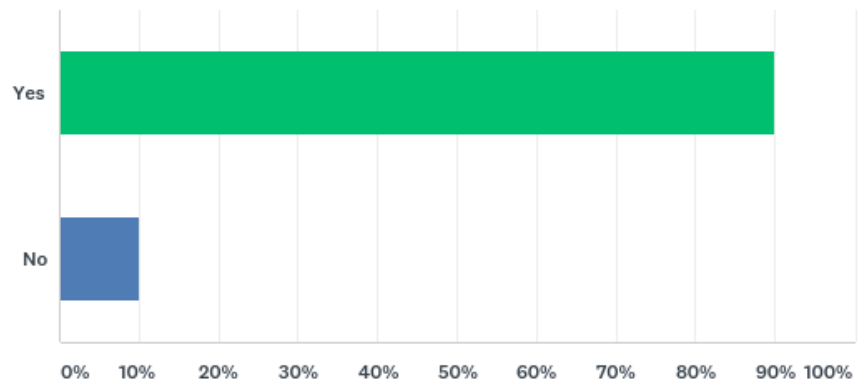
Of the twenty respondents to this question, eighteen (90%) answered “yes” they would recommend LAMP to a fellow speech-language pathologist. Only two (10%) stated that they would not recommend LAMP to a fellow speech pathologist. Four of the respondents to this item included comments in the space provided for commentary. One comment was provided by a speech pathologist who would not recommend LAMP. He or she indicated in the comment that whether or not to recommend LAMP would depend on the impairment of each client. The remaining comments were provided by speech-language pathologists who said they would recommend LAMP to another clinician. One respondent that answered “yes” provided the stipulation that he or she would recommend LAMP depending on each individual child and his or her needs. Another speech pathologist provided the stipulation that he or she would recommend LAMP as long as all parties involved are committed to using it. The final commenter stated that he or she



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would recommend LAMP because he or she is “a firm believer that the more tactics you are able to use as a practitioner, the more tools you have to assist that patient with recovery.”

*Figure 8: Recommendations of LAMP*



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**Chapter 5: Discussion and Conclusions**

According to the data, the majority of surveyed speech-language pathologists had some level of knowledge of LAMP, ranging from minimal knowledge to being very knowledgeable. Only five of the speech-language pathologists had no knowledge. There were no trends among the speech pathologists who had no knowledge of LAMP—three of these participants indicated that they work in a school system, one in a hospital, and one is retired from a university. There were also no trends among the four speech pathologists who were very knowledgeable of LAMP—two of these participants indicated that they work at a college or university, one in an outpatient rehabilitation clinic, and one in an early intervention clinic. Further research should investigate how speech-language pathologists came to be informed about LAMP, whether it was through a colleague, during their education, at a conference, or through some other modality.

The majority of speech-language pathologists who participated in this survey have worked with an individual who communicates using AAC. Only five participants have never worked with such a client. Three of these individuals also answered that they have no knowledge of LAMP. Of the remaining speech pathologists who have worked with an individual who uses AAC, twenty have used LAMP with these clients while seventeen have not. The seventeen speech pathologists could have a number of reasons why they have never used LAMP with these individuals including: the specific impairments of each client, personal preferences, level of knowledge of LAMP, and/or comfortability using LAMP. Future research should be conducted to explore why speech-language pathologists who work with AAC clients would choose not to use LAMP. Future

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researchers should also investigate the procedures by which speech pathologists are trained to use LAMP. It is possible that there is a correlation between the extent and quality of LAMP training and a speech pathologist's satisfaction with LAMP.

Of the twenty speech pathologists who have used LAMP, fifteen of them claimed to have used it with individuals with autism. More surveyed speech pathologists have used LAMP with individuals with autism than with any other population. These results indicate that LAMP has consistently remained to be a technique predominantly used for those with autism who require AAC to communicate. However, the results also indicate that LAMP has greatly expanded from being used exclusively for individuals with autism to being utilized across a wide range of populations. Further investigation should be performed regarding the level of success speech pathologists have found with clients of each population with whom they have used LAMP.

This research is limited because only Mississippi speech-language pathologists were surveyed; therefore, this data cannot be assumed to be the same for speech pathologists elsewhere in the country. In the future, researchers should investigate how this data compares to data from speech-language pathologists in other parts of the United States. The data gathered from this study indicated that the majority of speech-language pathologists in the state of Mississippi have knowledge of LAMP. Nearly half of these speech pathologists have used LAMP and all that have used it have found some degree of success with it. It is the hope of the researcher that this data will be encouraging to those who are already proponents of LAMP and/or have used it at some point in their careers. For those that have not used LAMP and/or previously had no knowledge of LAMP, it is

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the hope of the researcher that this research will urge them to learn more about it and perhaps utilize LAMP with communicators who could derive benefit from it.

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References

- Adamson, L., Bakeman, R., Deckner, D., & Ronski, M. (2008). Joint engagement and the emergence of language in children with autism and down syndrome. *Journal of Autism and Developmental Disorders*, 39, 84-96. 10.1007/s10803-008-0601-7.
- Augmentative and Alternative Communication. (n.d.) Retrieved April 04, 2017, from <https://www.asha.org/Practice-Portal/Professional-Issues/Augmentative-and-Alternative-Communication/>
- Armstrong, B., McLaughlin, T. F., Clark, A., & Neyman, J. (2012). A case report: using augmentative and alternative communication to teach a preschool student with autism to respond and request appropriately. *International Journal of Brain and Cognitive Sciences*, 1(4), 26-29. 10.5923.
- Bedwani, M., Bruck, S., & Costley, D. (2015). Augmentative and alternative communication for children with autism spectrum disorder: an evidence-based evaluation of the language acquisition through motor planning (LAMP) programme. *Cogent Education*, 2(1), 1. Doi:10.1080/2331186X.2015.1045807
- Canosa, R. (1994). Training teachers to use milieu strategies to teach language to students who use an augmentative communication system. *Dissertation Abstracts International, A: The Humanities and Social Sciences*, 55(6), 1525-1526.  
Retrieved from <http://lynx.lib.usm.edu/login?url=http://search.proquest.com/docview/58308452?accountid=13946>

ASSESSING SPEECH-LANGUAGE  
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Duffy, C., & Healy, O. (2011). Spontaneous communication in autism spectrum disorder:

A review of topographies and interventions. *Research in Autism Spectrum*

*Disorders* 5(3), 977-983. <http://dx.doi.org/10.1016/j.rasd.2010.12.005>

Giangrasso, D., (2015). *Exploring social development in a child with autism who uses the*

*language acquisition through motor planning (LAMP) treatment approach*

(Master's thesis). Retrieved from [http://digitalcommons.brockport.edu/ehd\\_theses/604](http://digitalcommons.brockport.edu/ehd_theses/604)

Halloran, C., & Halloran, J. (2015). Language acquisition through motor planning: AAC

strategies for promoting the development of communication for individuals with

autism spectrum disorder. Wooster, OH: The Center for AAC and Autism.

Hourcade, J., Pilotte, T., West, E., & Parette, P. (2016) A history of augmentative and

alternative communication for individuals with profound disabilities. *Focus on*

*Autism and Other Disabilities*, 19(4), 235-244. <https://doi.org/10.1177/1088>

3576040190040501

Information for AAC Users. (n.d.). Retrieved April 04, 2017, from

<https://www.asha.org/public/speech/disorders/Information-for-AAC-Users/>

Onur, K. (2011). A comparison of discrete trial teaching with and without gestures/signs

in teaching receptive language skills to children with autism. *Educational*

*Sciences: Theory and Practice* 11(3), 1436-1444. <https://eric.ed.gov>

[/?id=EJ936325](https://eric.ed.gov/?id=EJ936325)

ASSESSING SPEECH-LANGUAGE  
PATHOLOGISTS' KNOWLEDGE AND  
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Potts, M., Satterfield, B. (2015). *Studies in AAC and autism: the impact of LAMP as a therapy intervention*. [http://www.gatfl.gatech.edu/tflwiki/ images/4/43/](http://www.gatfl.gatech.edu/tflwiki/images/4/43/)

LAMP\_Rsch\_ Article.pdf

Pulliam, M. H. (2010). *The impact of an AAC device, using the LAMP approach, on an individual with autism spectrum disorder* (Master's thesis). Available from Proquest Dissertations and Theses. (Order No. 1483250).

The Center for AAC and Autism. (n.d.). Retrieved April 10, 2017, from <https://www.aacandautism.com/about>

The Center for AAC and Autism. (n.d.) Retrieved April 10, 2017, from <https://www.aacandautism.com/lamp>

Trembath, D., Balandin, S., Togher, L., & Stancliffe, R. J. (2009). Peer-mediated teaching and augmentative and alternative communication for preschool-aged children with autism. *Journal of Intellectual & Developmental Disability, 34*(2), 173-186. Retrieved from <http://lynx.lib.usm.edu/login?url=http://search.proquest.com/docview/85705625?accountid=13946>

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Appendices

Appendix A: Institutional Review Board Approval



THE UNIVERSITY OF  
**SOUTHERN MISSISSIPPI**

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**INSTITUTIONAL REVIEW BOARD**

118 College Drive #5147 | Hattiesburg, MS 39406-0001

Phone: 601.266.5997 | Fax: 601.266.4377 | [www.usm.edu/research/institutional.review.board](http://www.usm.edu/research/institutional.review.board)

**NOTICE OF COMMITTEE ACTION**

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.  
Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 17110203

PROJECT TITLE: Language Acquisition through Motor Planning Among Mississippi Speech-Language Pathologists

PROJECT TYPE: Honor's Thesis Project

RESEARCHER(S): Mary Catherine Cazalas

COLLEGE/DIVISION: College of Health

DEPARTMENT: Speech and Hearing Sciences

FUNDING AGENCY/SPONSOR: N/A

IRB COMMITTEE ACTION: Expedited Review Approval

PERIOD OF APPROVAL: 11/20/2017 to 11/19/2018

**Lawrence A. Hosman, Ph.D.**

**Institutional Review Board**



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Appendix B: Participant Consent Letter

Dear Sir or Madam,

My name is Mary Catherine Cazalas, and I am a senior Speech Pathology major at The University of Southern Mississippi. I am working towards graduating with honors and have begun the research for my honors thesis. My research is focused on the knowledge and use of Language Acquisition through Motor Planning among speech-language pathologists.

Thank you in advance for your interest in this study. By participating you are helping gain information about the knowledge and usage of Language Acquisition through Motor Planning among speech-language pathologists in the state of Mississippi. To be eligible for this study, you must be a certified, practicing speech-language pathologist. Your participation in this survey is anonymous and voluntary and your identity will remain unknown to the researcher.

All key personnel that have designed and will conduct this research have gone through education on human subjects research. There is no foreseeable risk to you during participation in this research study; however, even if you begin the survey you may withdraw from the study at any time prior to the actual submission of the survey. Completion of the survey indicates consent to participate in the study.

This research has been reviewed by the University of Southern Mississippi Institutional Review Board and ensures that the research projects follows federal regulation in regards to human subjects. For any questions regarding the rights as a participant contact the Chair of the Institutional Review Board at 601-266-5997. The IRB approval number for this study is 17110203.

Please answer the questions to the best of your ability. For any questions regarding the research contact me.

Thank you,  
Mary Catherine Cazalas  
Mary.cazalas@usm.edu