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## Treatment of Stuttering in Children: Clinician Perceptions of Therapy Approaches

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Running Head: TREATMENT OF STUTTERING IN CHILDREN

Treatment of Stuttering in Children:

Clinician Perceptions of Therapy Approaches

Kolbee L. Gilmore

University of Arkansas

### Abstract

The purpose of this study was to investigate the range of therapy approaches used to treat children who stutter in order to determine if there was a trend for clinicians to use technological devices rather than verbal methods. The questions of the study included the frequency at which each approach was used, whether or not the results differed based on the approach used, whether developmental age group was a factor regarding results, and the clients' opinions on each approach. A brief survey was electronically distributed to 100 speech-language pathologists who have conducted therapy using either of the two approaches. The results showed that Fluency shaping, a verbal method, was used most often with children who stutter. The 7-12 year old age group showed the most success with treatment. Most of the children were happy with the outcome of therapy, leaving very few who were unsatisfied.

### **Treatment of Stuttering in Children: Clinician Perceptions of Therapy Approaches**

Stuttering is a disorder that has drawn attention to people for all the wrong reasons for years. It has caused people to be underestimated, treated unequally, bullied, and to have low self-esteem. About 1% (68 million people) of the world's population stutters. This means that everyone in the world has encountered a person who stutters at one point in life. The severity of the disorder varies from person to person. Some of the people have been treated for it and some have not; those who have been treated may not have gone through the same treatment for the disorder. The disorder, itself, is complicated which in turn complicates treatment.

With time comes the advancement of technology. Treatment for stuttering is among these technological advances. Stuttering has been a disorder present since the beginning of time and there have been countless treatment approaches aimed to cure it. Still, a definite cure for stuttering has not been discovered. Some people don't believe treating the disorder is necessary; others however believe a treatment approach is needed. In the past, traditional therapy routes have been taken. These were a process, which included a large amount of time dedicated to therapy without the promises of stutter-free speech as a result of that time. The approaches were affordable and easily accessible. Today, technology has changed the time requirement and the cost of stuttering treatment. Delayed Auditory Feedback and Augmentative- Alternative Communication devices are expensive, but can reverse stuttering immediately. The quality and accuracy, however, of these advances in the treatment of stuttering are being debated.

## **Literature Review**

### **What Is Stuttering?**

From the biblical days to the 21<sup>st</sup> century, stuttering has been an issue for people of all ages, genders, races, and cultures. One would think a cure for stuttering would have been found by now, however it hasn't. With years of close observation, researchers have not been able to find a cure, but they have discovered many ways to help the person who stutters improve his or her speech. This section will cover stuttering, its etiology, the social aspect, and past and present treatments of the disorder. Then four treatment approaches, Delayed Auditory Feedback, the SpeechEasy device, Fluency Shaping, and the Lidcombe Program, were compared.

To understand the treatment of stuttering, one must first know the in- depth definition of the stuttering syndrome. The American Speech-Language and Hearing Association (ASHA) describes stuttering as speech events that contain monosyllabic whole-word repetitions, part-word repetitions, audible sound prolongations, or silent fixations or blockages which may or may not be accompanied by accessory behaviors which the people who stutter (PWS) use in order to avoid or escape stuttering. As with all other speech disorders, stuttering must be noticeable to an observer. The occasional stammering over a word that everyone experiences is not considered disordered speech. According to ASHA, a PWS loses control of speech involuntarily, which changes the effectiveness of the speaker's communication. ASHA also notes that stuttering is "the result of certain physiological, neurological, or psychological deviations, certain linguistic, behavioral, or cognitive processes, or a combination of both". (ASHA 1999).

## **Etiology**

Though stuttering has existed for many years, the exact cause of the disorder is still unknown, which causes controversy when choosing which stuttering treatment is the most effective. There is little information on the exact origin of stuttering, but it is known that it originates during childhood and, like many other childhood language disorders, has a 4:1 ratio of occurrence in boys to girls.

According to a 2001 study conducted by Riley, Maguire, Franklin, and Ortiz, stuttering was first thought to have an environmental cause, similar to schizophrenia and autism. If a child had a stutter, the mother was blamed. Later, stuttering was thought to be in the ears of the beholder. However, with extensive research and genetic and neurological studies, the etiology of stuttering has taken a new route that exhibits stuttering as a neurological disorder that can be treated with medication. In this study Riley, Maguire, Franklin, and Ortiz focused on the medical perspective of stuttering. They discovered that “PWS have over-activation in the right primary motor areas or reduced activation in the left primary motor areas [of the brain] during a stuttering condition...” (p. 105). The conductors of this study also quoted from a 1995 study conducted by Wu et al. that “PWS exhibit a ‘permanent left caudate hypo-metabolism that is a possible trait marker for stuttering’” (p. 105). This study also presented the idea that dopamine is somehow associated with stuttering. According to their findings, when dopamine activity in the brain is elevated, stuttering occurs, but when there is a reduction of dopamine, the stuttering is reduced (Riley et al. p. 107). The results of the study conducted by Riley et al. reinforce the idea of stuttering as a neurological disorder that can possibly be treated with medicine.

## **Stuttering in the Social Aspect**

Stuttering occurs in every person's speech; however a person with stuttering as a disorder experience hardships that are often overlooked. A person who stutters (PWS) can take what may seem like forever to get his or her point across. This often time results in ridicule from the listener. In a July 2010 edition of the Florida Times-Union, 13 year old Matthew Reid's story was shared with the public. Dan Scanlan, the author of the article showed Reid's experiences as a PWS and how it affected his social life to the point where he was homeschooled for three years. Because of his speech disorder, he was bullied in school. In an essay he wrote, Reid shared that he did not like to be called on to answer a question in class. Even though he knew the answers, his peers made fun of him because he stuttered. He also tells about his experiences at recess. Reid stated that the boys would "circle around [him] and punch [him] and push [him] while saying 'Ha ha, you stutter and you're stupid'". As a result of the bullying, Reid said his stuttering got worse. According to Reid's mother, "His stuttering had gotten so bad everybody was getting a bit aggravated". Matthew Reid's story gives insight to what it is like for a child who stutters. (Scanlan, 2010.).

As seen in Matthew Reid's situation, classroom participation is affected when a person has a stuttering problem. A more recent example of this problem came to light in the October 11, 2011 edition of the New York Times when 16 year old Philip Garber Jr. was told to keep quiet when he tried to participate in class. At age 16, Garber was taking two college classes which proved that he does not lack intelligence, though he stutters. According to the article, Garber's professor sent him an e-mail asking him to write his questions on a piece of paper and either ask them before or after class in order to avoid "[infringing] on other students' time" (Pérez-Peña, 2011.). This shows just how much stuttering can affect a person's life. In Philip Garber Jr.'s

case, stuttering kept him from being able to ask questions in class, which in turn inhibits the learning process.

According to a study recently conducted at East Carolina University, when a fluent person listens to the speech of a PWS, the listener only focuses on the dysfluent speech (Guntupalli, Kalinowski, Nanjundeswaran, Saltuklaroglu, & Everhart, 2006). This reinforces the ineffectiveness of the communication of a PWS. Though it is something that people don't want to accept, as humans we often treat people who stutter as if they have no voice or as if they have nothing to say. This is something that could be changed with the right stuttering treatment.

As a result from encounters with people who don't understand stuttering, a PWS may lose self-confidence and begin to believe they really are "stupid" because they stutter. The ridicule they encounter sometimes even leads to depression. They often avoid participating in class, speaking to people who they are not comfortable around, and they even avoid phone conversations. The activities we take for granted on a daily basis are the very same activities a PWS wishes he or she could participate in. The everyday experiences of a PWS make it necessary to figure out which treatment is most effective in order to help change their lives, build their confidence, and help them gain deserved respect.

### **Treatment of Stuttering**

There are countless treatments in existence for stuttering; however, some of them are very controversial. A person could go through years of speech therapy and still suffer from stuttering. Many people blame this on the treatment the person received or on an "incompetent" speech-language pathologist (SLP). The problem however may not be an insufficient treatment or an incompetent SLP. Each treatment is effective when used on the correct terms. One treatment may be better for one age group than it is for another or for one gender over another.



The SLP must make sure the PWS fits into the norm-based group that the treatment given to the PWS is based on. It is important that the strengths of treatments are explored and the child's needs, beliefs, and background are considered when choosing a stuttering treatment to ensure that it is effective.

As stated before, there is no cure for stuttering; however the many treatments that have been made available over time bring hope and contentment to people who stutter. The Lidcombe Program, fluency shaping, and more technologically advanced treatments such as delayed auditory feedback (DAF), the SpeechEasy device being an example, were explored in order to ultimately discover clinicians' perceptions of these in therapy. All of the treatment approaches have positives and negatives that must be considered when the SLP is choosing the route he or she wants to take when treating the PWS.

**The Lidcombe Program.** The Lidcombe Program (LP) is a program for stuttering treatment based on Skinner's behavioral therapy idea of operant conditioning. It is a two- stage program that targets children ages 6 years or below. In this program, a stutter is defined as a moment of unambiguous dysfluency in speech which is judged by either the parent or the clinician. This program disregards ambiguous moments of stuttering because they may be considered normal (Harrison & Onslow, 1999.). In LP, "the parent receives training and support from the SLP in weekly clinic meetings throughout Stage 1" (Guitar & Miller, P. 42.). They are encouraged to praise the child when he or she uses stutter-free speech, described as "a period of speech judged by either or both the parent and/ or clinician while listening to the child's speech that contains no unambiguous moments of stuttering" (Harrison & Onslow, P. 118.). If the child stutters, the parents are encouraged to correct him or her with positive reinforcement. In stage one of the LP, the goal is to "reduce the frequency of children's stuttering to an insignificant

level and to maintain this reduction for a clinically significant period” (Harrison & Onslow, P. 119.). In stage 1, the client may spend 45-60 minute weekly visits to the clinic. In stage 2, the visits are reduced to 30 minutes anywhere from every 2 weeks to every 16 weeks (Harrison & Onslow, 1999.). The goal of the second stage of the program, which takes between 10 and 12 months to complete, is for the child to continue to maintain the speech criteria introduced in stage 1 for the time period. The LP is conducted by parents in everyday situations; therefore the child is continually receiving treatment without spending a great amount of time in a clinical setting. This makes it more comfortable and enjoyable for the child, which makes it easier to obtain participation.

Time is an important factor to consider when using the LP. Though stage 1 only requires 10 to 15 minutes of speech therapy conducted by parents daily, many parents believe it is difficult. The therapy is most effective when the child is “alert and cooperative” rather than “tired or distracted”. Unfortunately, the times when the child is “alert and cooperative” are usually the times when the child already has pre-existing activities; therefore the parents must designate a special time for therapy. Even when the parent sets aside time for therapy it still may be difficult simply because keeping the attention of a child of 6 years of age or below for 10 minutes or more solely with conversation is hard to do. Over time, parents have found that setting aside time is not necessary and that conducting treatment in their naturally occurring conversations with their child has been the best route to take. (Harrison & Onslow, 1999.)

In a 2009 study conducted by Barry Guitar and Barbara Miller, 15 preschool children- some with a family history of stuttering and others without, and some left handed while others were right handed- were treated using the Lidcombe Program. The children were tested prior to the treatment and also 12 months post-treatment. The results of their study showed that the

percentage of syllables stuttered (%SS) and the participants' scores on the Stuttering Severity Instrument, third edition were significantly improved. It also showed that whether the child was left-handed or right-handed was related to the long-term treatment outcome. The measurement of the participants' improvement was consistent with the severity of the child's pretreatment stuttering. (Guitar & Miller, 2009.).

Though it originated as a treatment for preschool age children, the LP has proven to be effective in school age children. For the most part, the process is the same for preschool age children and school age children, however the treatment goal for school age children is to achieve stutter-free or nearly stutter free speech. The fluent speech must be maintained for at least a year after treatment.

The LP for school age children must be tweaked to fulfill the needs of this population of children. As previously stated, the child's needs, beliefs, and background must be considered. School age children experience a shift in their relationship with their parents. At this age, the parents take the child's opinion into consideration more often. Also, as in Matthew Reid's case, the child may be experiencing bullying at school. These factors contribute greatly to whether or not the child will be willing to participate in speech therapy. If the child does not want to participate in therapy, it will be difficult for the parent to conduct the necessary daily therapy sessions. Time also becomes a greater enemy in school age children. The children spend more time away from home at school and participating in extracurricular activities. During stage 2 of the LP for school age children, the parents rate the severity of the child's stuttering on a scale of 1 to 10- 1 being no stuttering and 10 being extremely severe stuttering. %SS is measured by the clinician at each clinical visit. (Bruce, Harrison, Koushik, & Shenker, PP. 150-166.).

The LP for school age children is often successful, but it is important to consider the significant differences between preschool age children and school age children. The clinician and the parents must adjust the treatment to the child's needs, which are significantly different from what they were when the child was of preschool age. Succinctly, with a few changes the Lidcombe Program can be just as effective for school age children as it is for preschool age children.

**Delayed Auditory Feedback.** Delayed Auditory feedback is an electronic treatment method for stuttering. It is one of two subcategories of Altered Auditory Feedback (AAF). When the person who is wearing the device speaks, their voice is picked up by a microphone and is recorded, then played back into their ear. The speaker's voice is relayed back to them with a delay, not to be confused with Frequency shifted Auditory Feedback (FAF)- the other form of AAF- which alters the pitch of the speaker's voice rather than simply delaying his or her voice. (The British Stammering Association, p.1).

**The SpeechEasy Device.** One example for Delayed Auditory Feedback (DAF) is the recently developed SpeechEasy device. The SpeechEasy device allows its user to produce "spontaneous, immediate, and natural sounding speech without avoidance, substitutions, and circumlocution" (Kalinowski, 2003, p. 109). In this section, the general information about what the SpeechEasy is and how it is used in stuttering treatment will be explored.

To begin, the SpeechEasy was invented in 2001 by Dr. Joseph Kalinowski and a team of researchers at East Carolina University. This device holds credibility in the sense that its inventor is a PWS, himself. In a 2002 interview with ABC's Good Morning America, Kalinowski said he would pray for God to "take off [his] arm." He said that he would rather the other kids make fun of him for not having an arm if only he could speak fluently (Good Morning America, 2002).

The emotional toll of stuttering affects everyone with the disorder, especially during adolescent years. Children and teenagers from the outside looking in see stuttering as a comical situation, when in reality it is serious matter that brings hardships for people to face on a daily basis. This unfortunate truth ties back to Matthew Reid's story. The essay that Reid wrote allowed him to win a scholarship to pay for his SpeechEasy device.

Research has shown that when stutterers speak in unison, their speech is fluent- for example, when singing or saying the Pledge of Allegiance dysfluent speech is not present for a person who normally stutters (Good Morning America, 2002.). These results are the basis on which the SpeechEasy device was created. The SpeechEasy is a small earpiece that is inserted into the ear like a hearing aid. It has a microphone that allows the person who is wearing it to hear what they are saying. When the device echoes the sound back into the stutterer's ear, it deceives the brain into thinking there is more than one person speaking, and they are speaking in unison. Since the PWS speaks fluently when speaking in unison, the SpeechEasy tricks the person into being fluent.

In a recent study conducted by researchers at the University of Colorado at Boulder, the immediate effects of SpeechEasy use showed a stuttering reduction ranging from 30% to 74% (Pollard et al, 517.). The long-term effects of SpeechEasy therapy, however, are relatively unknown. Little is known about the long term effects because little research has been conducted over this time measure. The study conducted by Pollard et al showed mixed results. After being treated for 4 months, some of the participants felt that the SpeechEasy was of great assistance, while others felt otherwise. The results of this study show that the SpeechEasy perhaps only works for a certain group of people and more research is needed in order to find out which group the device is best fit for. In another study conducted by Finn et al, results showed positive,

stutter-free speech in monologues initially, but after 4 months of device use, the results worsened and the speech during monologues became more dysfluent (Bothe et al, 2005, p. 179).

When comparing the LP to the SpeechEasy Device, some factors must be taken into consideration. The LP was solely created for children. The SpeechEasy was created for all ages. This, however, doesn't prove that the LP is necessarily a better therapy route for a child than the SpeechEasy. Also, the LP is chosen more often perhaps because it is less expensive. The SpeechEasy costs thousands of dollars and is not easily accessible for many clients; therefore fewer reviews are available for the device. These factors can be of great essence when choosing which therapy approach is more effective for children.

**Fluency Shaping.** Another approach used to treat dysfluency is fluency shaping. This approach pinpoints stuttering as a physical rather than an emotional disorder. In fluency shaping, the articulators are re-trained to produce individual phonemes, then words, eventually progressing to full sentences. One example of this type of treatment is the Precision Fluency Shaping Program. It was developed by Dr. Ronald Webster at the Hollins Communications Research Institute in Virginia. The program requires 90 to 100 hours of therapy which includes reshaping of speech in the first phase followed by a second phase in which participants continue to use skills learned in therapy at home. The outcome of the program is highly dependent on the determination and dedication of the person who stutters. (Barrett, 2012).

## **Conclusion**

In summary, stuttering is a universally complex speech disorder that remains a mystery to this day. Yet, this disorder affects the daily lives of all who face it. Though the exact etiology or an exact cure is still unknown, there are numerous treatment approaches that can improve the disorder and aid a person in taking the necessary steps to achieve more effective speech. Some of

the available therapy approaches may be more effective for one population over another. Both LP and the SpeechEasy are successful tools in part because parents and therapists can easily use them. However, the effectiveness of one method versus the other at particular ages, in particular settings, or within belief systems of families is not well understood. Yet each of these parameters contributes to effective, long lasting and life changing therapy for the PWS. The purpose of this study was to address a subset of these parameters. The specific questions of the study were as follows.

1. How frequently are children introduced to the SpeechEasy versus delayed auditory feedback versus a traditional fluency program (Lidcombe) versus fluency shaping as part of their therapy?
2. Is there a difference in the success of treatment when delayed auditory feedback (DAF), the SpeechEasy device in particular, or a traditional fluency program (Lidcombe) or fluency shaping is used for intervention?
3. Do these changes differ by developmental age group?
4. What are the impressions of the children? (Do they like using the treatment approach?)

## **Methodology**

### **Participants**

One hundred speech-language pathologists who treat children with dysfluency were sought as participants in this study. There were no controls for work location, years of experience, or geographic area.

### **Materials**

An electronic survey was developed from the research literature. The first part of this survey asked information about the years of experience of the clinician, the number of clients

treated for dysfluency, and how many of those clients have been treated at various ages with delayed auditory feedback (as well as what proportion of those children used the SpeechEasy), the Lidcombe Program, fluency shaping, or an alternate therapy route.

### **Procedure**

The link to the electronic survey was provided to interest groups via email contact. All participants responded to the survey electronically guaranteeing confidentiality. There was no identifying information linking the survey responses with the participants or their clients.

### **Analysis**

Descriptive analysis was used to answer the questions of the study.

### **Results**

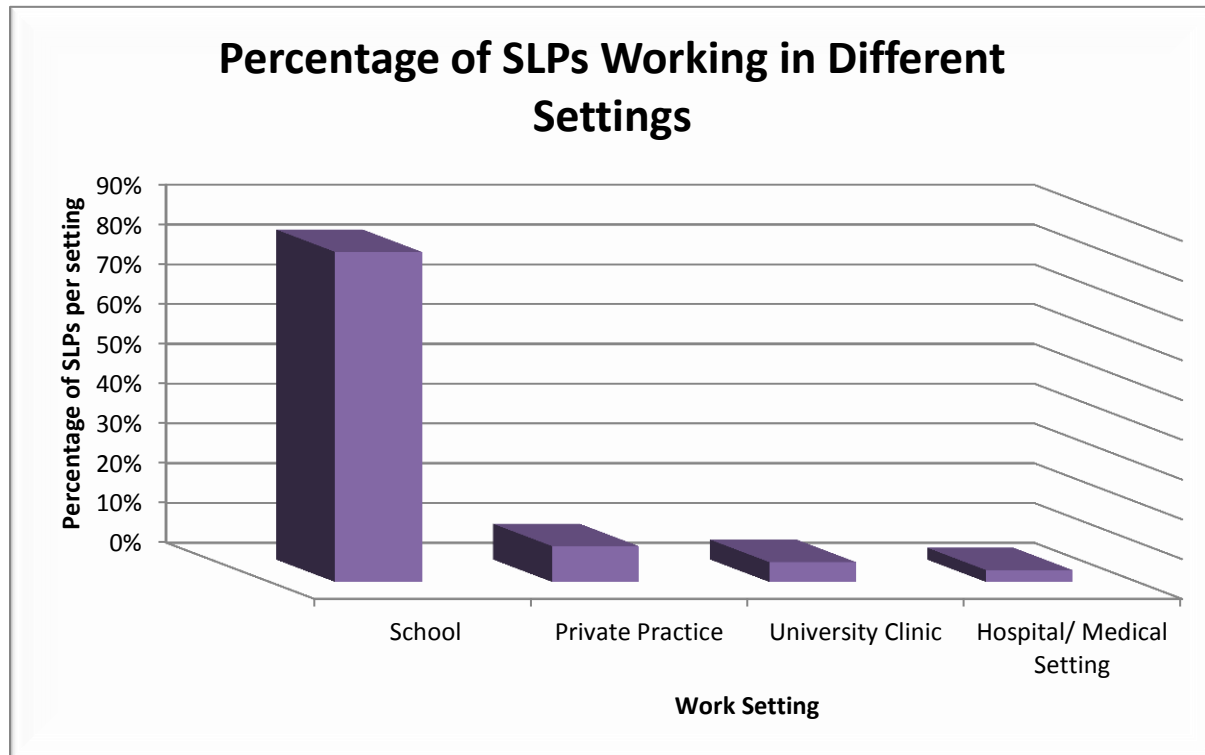
This study utilized an online questionnaire sent to several list serves that contained SLPs. The results of the questionnaire were analyzed to answer the questions of this study. The participants will be described, followed by an analysis of each question of the study, interpreting the results derived from the questionnaire.

### **Participants**

One hundred Speech-language Pathologists participated in this study. They ranged from 1-42 years of experience in the field. The participants in this study worked in a school, private practice, a university clinic, or a medical setting (Figure 1). Each of the participants has had experience with treating children for stuttering with most having a range of 5 to 15 clients over the extent of their career. There was no control for gender or age in the study, therefore men and women of all ages in the field could participate. The majority of the SLPs who participated in this study have used at least one of the following treatment approaches: The Lidcombe Program,



Delayed Auditory Feedback, The SpeechEasy, or Fluency Shaping. Those who have not used any of these have at least used another form of treatment for stuttering.

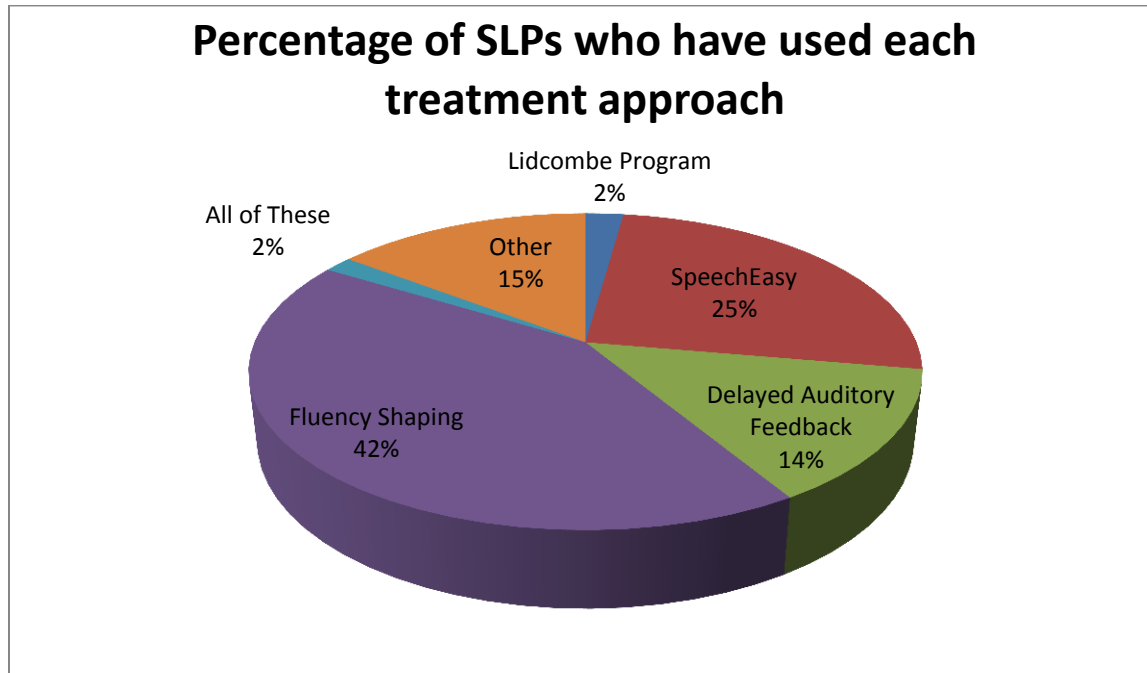


*Figure 1: Percentage of SLPs in Each Work Setting*

### Question One

The first question of this study focused on the frequency at which children are introduced to Delayed Auditory Feedback versus the SpeechEasy versus traditional therapy approaches such as the Lidcombe Program or Fluency Shaping. Item 4 on the questionnaire provided a percentage of SLPs who introduced each treatment approach to their clients. Most of the clients were introduced to Fluency Shaping. Twenty-five percent were introduced to the SpeechEasy. Other methods were used with 15% while 14% used DAF. The Lidcombe Program was the least popular with only 2% use and only 2% of the participants had used all of the approaches listed. These results are displayed in **Figure 2**. The results reveal a preference of traditional treatment

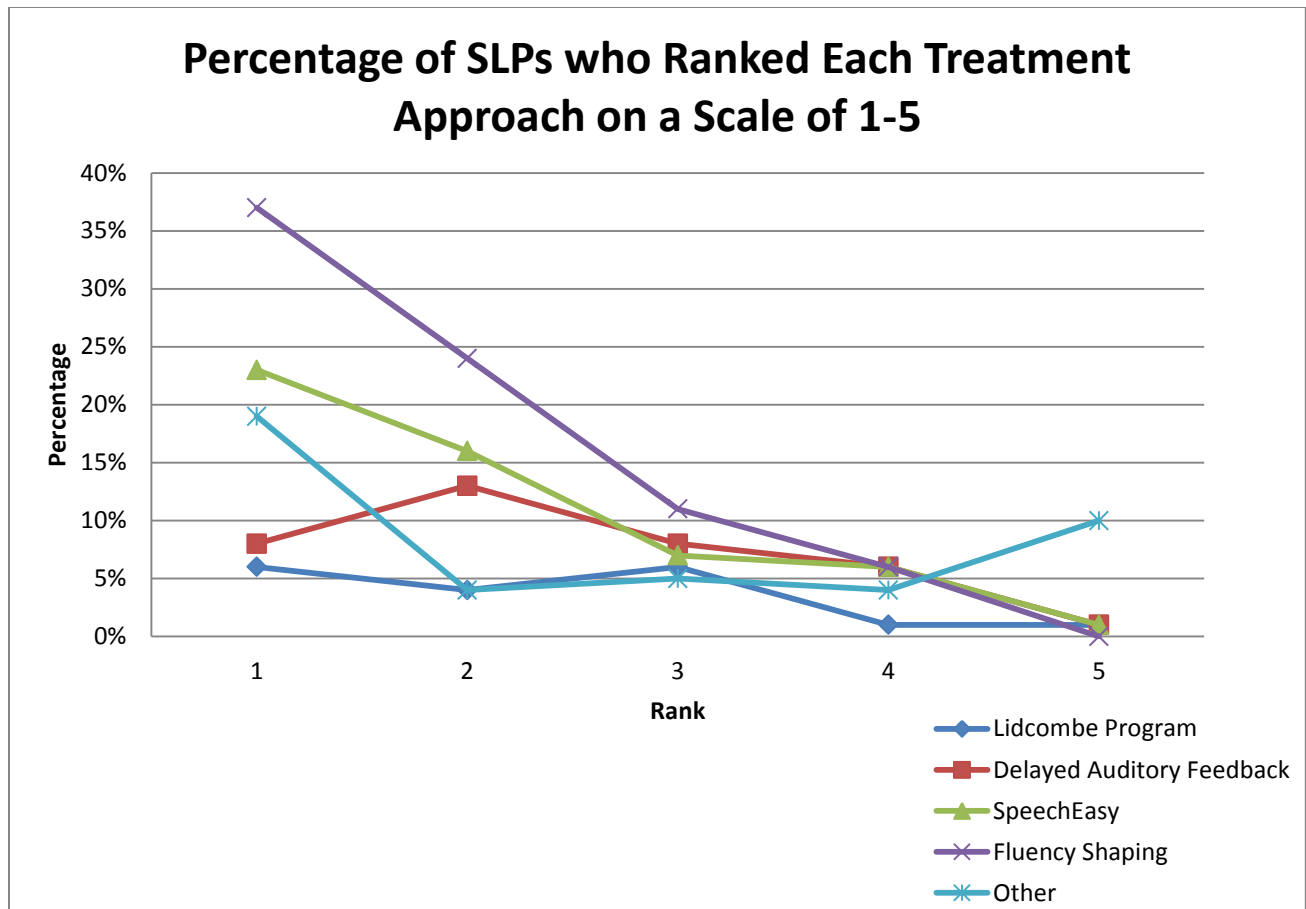
approaches over Augmentative-Alternative Communication Devices, with fluency shaping greatly outranking the Lidcombe Program and the SpeechEasy outranking Delayed Auditory Feedback.



**Figure 2: Percentage of SLPs who have used Each Treatment Approach**

### Question Two

The second question asked if there was a difference in the success of treatment when DAF or a traditional fluency program was used for intervention. Those who used the traditional approaches ranked them number one over the other treatments. When DAF came into play, the majority of participants ranked it as number two. Most of those who used the SpeechEasy ranked it as number one. These results reveal a preference of Traditional Treatment approaches and the SpeechEasy over other approaches. A line graph was used to illustrate the results of Item 5 on the questionnaire (Figure 3).

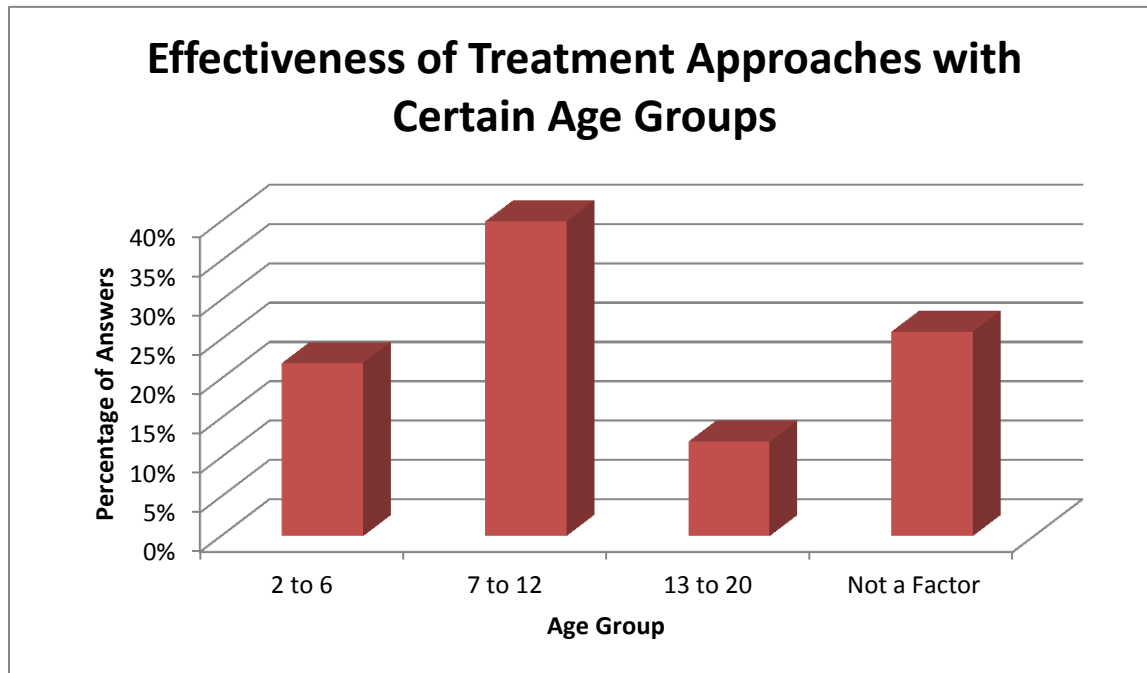


**Figure 3: Results of Questionnaire Item 5**

### Question Three

The third question of the study asked if the results differed by client age group. Item 8 of the questionnaire, which asks “was [your top ranked] approach more effective with a certain age group” provides an answer for this question. When asked if the approach the participant ranked number 1 was more effective with a certain age group, 40% stated that clients ages 7-12 had the most progress with the route taken. 26% stated that age group was not a factor in the effectiveness of their treatment approach. 22% had more success with the 2-6 year old age group. The age group that had the lowest percentage of effective treatment was the 13-20 years old.

These results displayed in **Figure 4** show that students ages 7 to 12 have had better results with programs used to treat dysfluency.



**Figure 4: Results for Item 8 of the Questionnaire**

#### **Question Four**

The fourth question of the study asks “what are the impressions of the children”. This question was covered by item 9 of the questionnaire. The participants were asked to fill in a blank describing their clients’ opinions about the treatment approach used. Because this question was open response, the amount and complexity of responses varied. Themes among the answers were used to interpret the results. The majority of the SLPs stated that their clients were happy with the outcome of their therapy approach. Others stated their clients showed indifference toward their approach, leaving few SLPs who stated that their clients expressed disapproval of the method chosen for them.

## Discussion

The purpose of this study was to investigate the range of therapy approaches used to treat children who stutter in order to determine if there is a trend for clinicians to use technological devices rather than verbal methods. In general, these results show that compared to other treatment approaches, Fluency Shaping is the most popular. Participants in this study indicated that it has yielded better results than most other approaches. Viewing the results as a whole, students ranging from age 7 to 12 appeared to have better success with the treatment approaches chosen for them though it is important to note that a noteworthy amount of participants stated that age was not a factor in the effectiveness of the treatment approaches they chose.

When asked about difficulties with the approach, many stated that the client's willingness and ability to carry the methods learned into therapy over into other environments was lacking. Clinician perceptions of the treatment approaches explored in this study vary individually, but when combined, a general perception was that clients had difficulty generalizing their therapeutic changes from clinical sessions into their everyday environments. Clinicians also stated that over time clients adapted to Delayed Auditory Feedback, causing the approach to become less effective. To prevent this problem from occurring, some of the clinicians encouraged their clients to only use the DAF device in important situations such as when giving presentations or during public speaking.

Several findings of this study differed from what was expected. Considering the steep cost of the SpeechEasy, a high rate of usage over other cheaper treatment approaches was not anticipated. When combined, the SpeechEasy and other forms of DAF are almost as popular as traditional approaches, trailing only by five percent.

The participants in this study expressed no issues with completing the requested task. The questionnaire was brief with well written, clearly stated items. The participants simply had to click on the link sent to them, answer the questions, and click the submit button. Overall, completing the questionnaire was quick and easy, making it less of a hassle for the participants.

### **Limitations of the Study**

The questionnaire used in the study allowed participants who had used more than one treatment approach to evaluate it and discuss the pros and cons of each approach. Although the questionnaire had some limitations, the participants were able to provide enough information to give an overview of the treatment approaches they used and of the outcomes of these approaches. The survey generator that was used put a limit on the amount of questions that could be included in the questionnaire, restricting thoroughness. Also, 83% of the SLPs who participated in the study worked in a school setting. The responses may have varied if each work setting was equally represented.

### **Future Directions**

In the future, the survey could be reconstructed, so that the treatment approaches could be linked to age groups, giving a better understanding of which (if any) approach has a greater success rate with which age group. The whole study could be modified and geared toward adults who are stutterers. The study would follow the same format as the first one; however a survey generator that allows more questions would be used. It would be based on the PWS's perceptions, feelings, and reflections on the treatment approach they used. The study would have fewer participants so that the results could be individually analyzed.

## Appendix A

Questionnaire: Please complete the following electronic questionnaire. If you have any questions, feel free to contact me or my advisor at the phone number or e-mail address listed. Thank you for participating in this study.

\*

### 1. How many years of experience do you have as a speech-language pathologist?

How many years of experience do you have as a speech-language pathologist?

### 2. In what setting do you work?

- ☐ In what setting do you work? School
- ☐ Private Practice
- ☐ University Clinic
- ☐ Hospital/ Medical Setting

### 3. How many children have you treated for dysfluency?

How many children have you treated for dysfluency?

\*

### 4. How many of the following have you used?

- ☐ How many of the following have you used? Lidcombe Program
- ☐ SpeechEasy
- ☐ Delayed Auditory Feedback (DAF)
- ☐ Fluency Shaping
- ☐ All of the Above

Other (please specify)

\*

### 5. If you have used more than one of the treatment approaches, rank them from 1-4, one being the most effective and 4 being the least effective. Choose N/A for the approaches you have not used.

N/A ☐  Lidcombe Program

N/A ☐  Delayed Auditory Feedback (DAF)

N/A ☐  SpeechEasy

N/A ☐  Fluency Shaping

N/A ☐  Other

**6. If you used more than one approach what made each effective and your top choice most effective?**

If you used more than one approach what made each effective and your top choice most effective?

Next

For questions 7-9, please answer referring to the treatment approach you felt was most effective.

**7. What was the most common outcome of this approach?**

- ☐ What was the most common outcome of this approach? The client became more fluent
- ☐ The client accepted being dysfluent
- ☐ There was no change in the client's fluency, or the client's attitude toward being dysfluent

**8. Was this approach more effective with a certain age group?**

- ☐ Was this approach more effective with a certain age group? 2-6
- ☐ 7-12
- ☐ 13-20
- ☐ Age group was not a factor in the effectiveness of this treatment approach

\*

**9. Please answer the following questions.**

Please answer the following questions. Were there any difficulties with this approach? If yes, please explain.

What were your clients' opinions about the treatment approach? Did (s)he like it?



## Appendix B

## IRB Approval Document



# UNIVERSITY OF ARKANSAS

Office of Research Compliance  
Institutional Review Board

December 17, 2012

## MEMORANDUM

TO: Kolbee Gilmore  
Fran Hagstrom

FROM: Ro Windwalker  
IRB Coordinator

RE: New Protocol Approval

IRB Protocol #: 12-12-316

Protocol Title: *Treatment of Stuttering in Children: A Comparison of Therapy Approaches*

Review Type: ☒ EXEMPT ☐ EXPEDITED ☐ FULL IRB

Approved Project Period: Start Date: 12/17/2012 Expiration Date: 12/16/2013

Your protocol has been approved by the IRB. Protocols are approved for a maximum period of one year. If you wish to continue the project past the approved project period (see above), you must submit a request, using the form *Continuing Review for IRB Approved Projects*, prior to the expiration date. This form is available from the IRB Coordinator or on the Research Compliance website (<http://vpred.uark.edu/210.php>). As a courtesy, you will be sent a reminder two months in advance of that date. However, failure to receive a reminder does not negate your obligation to make the request in sufficient time for review and approval. Federal regulations prohibit retroactive approval of continuation. Failure to receive approval to continue the project prior to the expiration date will result in Termination of the protocol approval. The IRB Coordinator can give you guidance on submission times.

**This protocol has been approved for 100 participants.** If you wish to make *any* modifications in the approved protocol, including enrolling more than this number, you must seek approval *prior to* implementing those changes. All modifications should be requested in writing (email is acceptable) and must provide sufficient detail to assess the impact of the change.

If you have questions or need any assistance from the IRB, please contact me at 210 Administration Building, 5-2208, or [irb@uark.edu](mailto:irb@uark.edu)

## References

- Barrett, R. (n.d.). Fluent Speech - Our Program. *Fluent Speech - The Precision Fluency Shaping Program*. Retrieved December 9, 2012, from <http://fluentspeech.com/program.php>
- Bothe, A.K., Bramlett, R.E., & Finn, P. (2005). Science and Pseudoscience in Communication Disorders: Criteria and Applications. *American Journal of Speech-Language Pathology*, 14, 172-186.
- Bruce, M., Harrison, E., Koushik, S., & Shenker, R. (2010). The Lidcombe Program with School-Age Children who Stutter. *Treatment of Stuttering: Established and Emerging Interventions*. Pp. 150-166.
- “Electronic fluency devices: main page” - British Stammering Association. (n.d.). *British Stammering Association - Homepage*. Retrieved December 9, 2012, from <http://www.stammering.org/elec.html#home>
- Ellis, J.B., Finan, D., Pollard, R., & Ramig, P.R. (2009). Effects of the SpeechEasy on Objective and Perceived Aspects of Stuttering: A 6-Month, Phase 1 Clinical Trial in Naturalistic Environments. *Journal of Speech, Language, and Hearing Research*, 52, 516-533.
- Everhart, D., Guntupalli, V.K., Kalinowski, J., Najundeswaran, C., & Saltuklaroglu, T. (2006). Psychophysiological responses of adults who do not stutter while listening to stuttering. *International Journal of Psychophysiology*, 62(1), 1-8.
- Franklin, D., Maguire, G., Ortiz, T., & Riley, G. (2001). Medical Perspectives in the Treatment of Stuttering. *Contemporary Issues in Communication Science and Disorders*, 28, 104-110.
- Gibson, C., Sawyer, D. (2002, August). *Good Morning America*. Atlanta, GA: ABC News.
- Guitar, B., McCauley, R. (2010). *Treatment of Stuttering: Established and Emerging Interventions*. (1<sup>st</sup> ed.). Baltimore: Lippincott Williams & Wilkins.
- Harrison, E., & Onslow, M. (2010). The Lidcombe program for Preschool Children Who Stutter. *Treatment of Stuttering: Established and Emerging Interventions*. Pp. 118-140.
- Kalinowski, J. (2003). Self-reported efficacy of an all in-the-ear-canal prosthetic device to inhibit stuttering during one hundred hours of university teaching: An autobiographical clinical commentary. *Disability and Rehabilitation*, 25, 107-111.
- Pérez-Peña, R. (2011, October 11). Stutterer speaks up in class; his professor says keep quiet. *The New York Times*, pp. A1, A21.
- Scanlan, D. (2010, July 29). Essay about being bullied secures help for stuttering 13-year-old: He wins a scholarship for a speech-aid device. *The Florida Times-Union*.

"Terminology Pertaining to Fluency and Fluency Disorders: Guidelines." *American Speech-Language Hearing Association*. N.p., n.d. Web. 7 Mar. 2012.  
<[www.asha.org/cs/htm/GL999-00063.html#sec1.3.5](http://www.asha.org/cs/htm/GL999-00063.html#sec1.3.5)>.