

2008

Management of children who stutter : a survey of school-based clinicians

Megan Zaninovich Murphy
San Jose State University

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DOI: <https://doi.org/10.31979/etd.7q3w-k53d>
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MANAGEMENT OF CHILDREN WHO STUTTER:

A SURVEY OF SCHOOL-BASED CLINICIANS

A Thesis

Presented to

The Faculty of the Department of Communicative Disorders and Sciences

San José State University

In Partial Fulfillment

of the Requirements for the Degree

Master of Arts

by

Megan Zaninovich Murphy

December 2008

UMI Number: 1463381

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APPROVED FOR THE DEPARTMENT OF EDUCATION

Michael L. Kimbarow

Dr. Michael Kimbarow, Ph.D.

Minerva Galvan

Dr. Minerva Galvan, Ed.D.

Jean Jackson

Jean Jackson, M.A.

APPROVED FOR THE UNIVERSITY

David K. Bush

12/4/08

ABSTRACT

MANAGEMENT OF CHILDREN WHO STUTTER:

A SURVEY OF SCHOOL-BASED CLINICIANS

by Megan Zaninovich Murphy

This study investigated the attitudes, educational preparation, and perceived competence of speech-language pathologists (SLPs) working in the California public school system regarding managing children who stutter (CWS). Results were compared to those reported in similar studies performed over the past 15 years.

One hundred SLPs completed a 28-question survey. Results showed that respondents completed a similar amount of fluency course work but obtained fewer hours of clinical practicum with fluency clients during their graduate program when compared to respondents to surveys performed in the 1990's. Though the majority of respondents to the current survey reported feeling competent managing CWS, the percentage was notably less than reported by surveys performed in the 1990's. Respondents to the current survey employed a variety of treatment approaches when working with CWS. However, respondents were more likely to use treatments which have been used historically than to use treatments for which empirical evidence exists.

ACKNOWLEDGEMENTS

I would like to thank all of my professors, friends, and family who supported me during the creation of this thesis. I am especially grateful to my committee members, Dr. Michael Kimbarow, Dr. Minnie Galvan, and Professor Jean Jackson for their encouragement to write a thesis, and for the many hours of mentorship and guidance they provided me. I would like to thank my friends who volunteered their time to read and offer advice on my work. Lastly, I thank my husband, Tom, for his constant love, support, and understanding.

DEDICATION

I would like to dedicate this thesis to people who stutter and their families. I hope someday soon medical science provides us with the answers we need to alleviate this complicated disorder. Until then, it is my hope that speech-language pathologists continue to search compassionately for ways to improve the quality of life for people that stutter.

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CHAPTER I

Introduction

Statement of Problem

As early as the 1960's, surveys have reported that speech-language pathologists (SLPs) feel ill-equipped to treat stuttering (Fraser, 1966). The most recent of these studies took place in the late 1990's (Brisk, Healey & Hux, 1997; Cooper & Cooper, 1996; Kelly et al., 1997). Clinicians reported being particularly uncomfortable treating young children who stutter (CWS) (Cooper & Cooper, 1996). Addressing discomfort on the part of some clinicians in treating childhood stuttering is especially important considering that young children are generally more amenable to stuttering treatment than adolescents and adults who have been stuttering for a long period of time (Manning, 2001).

Purpose of Study

The goal of this study is to update information found in previous surveys by identifying current attitudes held by licensed SLPs working in the California public school system. This survey focuses on the following questions: (a) Do school-based clinicians feel they received adequate education and training from their graduate program to work with CWS? (b) Do school-based clinicians feel more or less confident managing CWS than clinicians did in the 1990's? (c) When treating CWS, what types of treatment programs do school-based clinicians use, and (d) are the treatments implemented by school-based clinicians evidence-based?

Based on findings, suggestions will be made for changes to be implemented in current practice. In addition, aspects of practice that may be improved by future research will be identified.

Assumptions

In order to conduct this study, it was assumed that speech-language pathologists who responded to the survey did so accurately and to the best of their ability.

Limitations

Some respondents chose not to complete the survey in its entirety. This limitation was beyond the control of the research design of the current study.

Delimitations

Although speech-language pathologists work in a variety of settings, the current study focused only on the experiences of speech-language pathologists working in the California public schools.

Although speech-language pathologists work with people who stutter across the age span, the current study focused mainly on the management of children who stutter.

Although two subtypes of stuttering exist (i.e., developmental and acquired stuttering), the current study focused only on developmental stuttering.

CHAPTER II

Review of the Literature

Fluency Disorders

Fluency disorders affect the natural flow of speech. Manning (2001) described fluent speech as speech that “flows easily and smoothly in terms of both sound *and* information. There are no disruptions in the stream” (p. 89). Rate, continuity, and duration are three examples of fluency characteristics as described by Starkweather (1987, as cited in Manning, 2001). One characteristic of fluent speech is the rate of speech; optimally, the stream of speech is neither too fast nor too slow. Another characteristic is the continuity of speech. Fluent speech is free of excessively long pauses and/or interjections (e.g., “well”, “um”, “like”). Lastly, there is the duration of speech segments. One example of normal duration is that stressed syllables are longer in duration than unstressed ones (Umeda, 1975, as cited in Manning, 2001).

Normal speakers sometimes experience disfluencies. For example, Yairi (1981) found that normally-speaking two-year-old children often exhibited interjections, revisions, and single-syllable repetitions. Similarly, Manning and Shirkey (1981) (as cited in Yairi & Ambrose, 2005) noted that normal adult speakers occasionally exhibit what they termed *formulative disfluencies*, which consist of interjections, and breaks or repetitions “between whole words, phrases, and larger syntactic units” (p. 98). However, the disfluencies of people who suffer from fluency disorders are both quantitatively and qualitatively different from the disfluencies exhibited by normal speakers. Ways of

differentiating between normal and abnormal disfluencies will be discussed in more detail below.

Developmental stuttering is the most common fluency disorder (Manning, 2001). Developmental stuttering occurs in children, usually between the ages of 24 and 42 months (Yairi & Ambrose, 2005). Developmental stuttering is not associated with any known etiology.

Other types of fluency disorders include acquired stuttering and cluttering. People with acquired stuttering often have the same symptoms as people with developmental stuttering. Unlike developmental stuttering, acquired stuttering is attributed to neurological damage or psychological trauma (Manning, 2001). Cluttering differs symptomatically from stuttering. For example, people who clutter often exhibit an abnormally fast rate and have excessive levels of normal disfluencies, such as revisions and interjections (St. Louis, 2008). In addition, people who clutter are often not aware of their disfluencies.

What Is Stuttering?

There is no standard definition of stuttering. Perhaps this is what prompted West, Ansberry, and Carr (1957) to state that “everyone but the expert knows what stuttering is” (as cited in Hamre, 1992, p. 7). The fact that experts have been unable to agree on a definition of stuttering highlights the complexity of the disorder. Descriptions vary widely, and include descriptions of the characteristics of speech of PWS (people who stutter), and psychological and cognitive factors affecting PWS.

Though there are many characteristics associated with stuttering, the most common one is disfluent speech. Disfluencies can be measured and categorized in different ways, as well as described both quantitatively and qualitatively.

Quantitative Measures

One simple way of measuring disfluencies is to calculate the percentage of disfluencies using a pre-determined metric (Bloodstein, 1995). Examples of different metrics include counting the number of disfluencies per specified number of syllables, counting the number of disfluencies per specified number of words, and counting the number of disfluencies per specified length of time (Yairi & Ambrose, 2005). However, there are a few drawbacks to this approach. Yairi (1997) noted that using different metrics to measure disfluencies leads to different results. He cited a study by Yairi and Hubbard (1988) in which the same speech sample yielded a 25.1% disfluency rate per 100 words, but a 22.6% disfluency rate per 100 syllables. An additional problem with stuttering frequency counts is low interrater reliability; Bloodstein (1995) cited two studies in which agreement was poor between trained clinicians performing stuttering frequency counts.

A more specific way of measuring disfluencies is to count specific types of disfluencies. While PWNS (people who do not stutter) occasionally exhibit disfluencies (Davis, 1939; Johnson & Associates, 1959; Yairi, 1981), observations that the disfluencies of PWS were both quantitatively and qualitatively different than PWNS provided justification for dividing disfluencies into subtypes (Ambrose & Yairi, 1999; Bloodstein, 1992; Hamre, 1992; Wingate, 1962; Yairi, 1981; Yairi & Lewis, 1984).

Johnson and Associates (1959) devised one of the earliest categorization schemes for disfluency subtypes. Johnson's scheme organized disfluencies into seven categories: (a) sound or syllable repetitions, (b) word repetitions, (c) phrase repetitions, (d) sound prolongations, (e) pauses, (f) interjections, and (g) blocks.

Johnson's scheme has been modified over the years (Yairi & Ambrose, 2005), and can be seen in the following example of a categorization scheme, as described by Yairi and Ambrose (1999). This scheme divides disfluencies into *Stuttering-Like Disfluencies* (SLD) and *Other Disfluencies* (OD).

SLD consist of three types of disfluencies: (a) part-word repetitions (e.g., "I *kno-kno-knocked* over the vase"), (b) single-syllable word repetitions (e.g., "*I-I-I-I* knocked over the vase"), and (c) disrhythmic phonation (e.g., "*IIIIIIII* knocked over the vase" [also referred to as a prolongation], or "*I.....* knocked over the vase" [also referred to as a block]). Yairi and Ambrose (2005) argued that PWS were statistically more likely to exhibit SLD than PWNS.

OD also consist of three types of disfluencies: (a) interjections (e.g., "I *uh* knocked over the vase"), (b) multiple-syllable word and phrase repetitions (e.g., "*I knocked over... I knocked over* the vase"), and (c) revision or abandoned utterance (e.g., "I knocked over the *va...glass*").

Grouping disfluencies into SLD and OD is just one example of a disfluency categorization scheme. Van Riper (1982, as cited in Manning, 2001) proposed a disfluency categorization scheme that included 26 criteria for differentiating stuttering from normal disfluency. Yaruss (1997) summarized three additional disfluency

categorization schemes: (a) within-word versus between-word disfluencies, (b) stutter-type versus normal-type disfluencies, and (c) less-typical versus more-typical disfluencies.

Because there are so many ways to categorize disfluencies, accurately interpreting the results of disfluency studies can be challenging. Yairi and Ambrose (2005) recommended that “comparisons among results of different studies or clinical reports should carefully consider the composition of the disfluency systems employed” (p. 103).

Researchers also disagree on measurement of specific disfluency characteristics. For example, researchers disagree on how to record multiple disfluencies. When more than one disfluency occurs within a syllable or word boundary, some researchers advocate counting all disfluencies, whereas others advocate counting only one (Yairi & Ambrose, 2005). This can produce dramatically different results when measuring complex stuttering behavior.

Failure to note multiple disfluencies also may result in a failure to differentiate stuttering from normal disfluency. Multi-unit repetitions can aid in distinguishing stuttering from normal speech behavior. In a study of preschool-age CWS, Yairi and Lewis (1984) found that CWS often produce multiple repetition units on part-word repetitions. Though CWNS (children who do not stutter) occasionally exhibit part-word repetitions, they rarely produce more than one repetition unit (Yairi, 1981).

Another characteristic for which there is no measurement standard is the duration of disfluencies. Measurements of the duration of disfluencies are often ignored when measuring stuttering behavior, yet studies suggest that disfluency durations can aid in

differentiating stuttering from normal disfluency. Throneburg and Yairi (1994) stated that, even in young children, the average duration of disfluencies “tend to be characterized by quantifiable physical/temporal properties that differentiate them from disfluencies of normally speaking children” (p. 1073). Sound prolongations, for example, are often judged to be stuttering when they exceed a certain duration (Lingwall & Bergstrand, 1979, as cited in Yairi & Ambrose, 2005; Zebrowski & Conture, 1989). Conversely, Throneburg and Yairi (1994) found that, although CWS often produced multi-unit repetitions, the duration of each unit of repetition was shorter than those of the repetitions of CWNS.

Qualitative Measures

Apart from spoken disfluencies, another aspect common to stuttering is the presence of secondary characteristics. Secondary characteristics are often divided into overt (i.e., observable) and covert (i.e., introspective) characteristics. Overt characteristics include “abnormal, visible tension or movement of the face, eyes, lips, tongue, jaw, and neck; respiratory irregularities; and tense movements of the head or limbs” during a moment of disfluent speech (Yairi & Ambrose, 2005, p. 69). Covert characteristics are symptoms that PWS experience internally and are not observable by others. Bloodstein (1995) divided covert symptoms into three categories: (a) “a sense of being frustrated in the attempt to speak”, (b) “feelings of muscular tension”, and (c) “emotional or affective reactions” (p. 25).

In the past, many stuttering experts believed secondary characteristics were not present at the onset of stuttering, but instead developed later in the course of the disorder.

However, a number of recent studies challenged this assertion (e.g., Schwartz, Zebrowski, & Conture, 1990; Yairi, Ambrose, Paden, & Throneburg, 1996; both cited in Yairi & Ambrose, 2005). These investigators found that some preschool-age CWS indeed evidenced secondary characteristics near the time of onset.

What Is Known about Stuttering

There remain many unanswered questions regarding stuttering. However, there are a few characteristics upon which researchers agree. These include (a) the average age of onset, (b) the spontaneous recovery rate, and (c) gender differences.

The onset of developmental stuttering is usually seen in the preschool years. Yairi and Ambrose (2005) found that the onset of stuttering was concentrated in children between the ages of 24 and 42 months, and most often occurred during the third year of life. These results were similar to those reported by Johnson and Associates (1959) decades earlier. Yairi and Ambrose (2005) also noted that, until the onset of stuttering, CWS usually exhibit developmentally normal speech.

Research also consistently shows a discrepancy between the incidence and prevalence of stuttering. The number of people who have ever stuttered is much higher than the number of people who identify themselves as a PWS at one point in time. Approximately 75% recover from early childhood stuttering without professional intervention (Yairi & Ambrose, 1999). The incidence, or number of people who report ever stuttering, is approximately 5% of the population, whereas the prevalence, or number of people who report being a PWS at one point in time, is approximately 1% of

the population (Andrews & Harris, 1964, as cited in Yairi and Ambrose, 1999; Bloodstein, 1995).

More female children spontaneously recover from stuttering than male children. The ratio of males who stutter to females who stutter, estimated to be around 2:1 in the preschool years, jumps to 4:1 by adolescence (Bloodstein, 1995; Buchel & Sommer, 2004; Felsenfeld, 2002; Yairi & Ambrose, 1999). It is unknown why this phenomenon occurs.

One factor that remains unknown regarding stuttering is its etiology. Over the years, stuttering has been attributed to physiological, learned, psychogenic, and genetic factors. Because the etiology is currently unknown, it is difficult for SLPs to develop adequate therapeutic interventions for the disorder. The following discussion gives an historical overview of theories of developmental stuttering and their associated treatments.

Historical Perspectives on Etiology and Treatment

Early Perspectives

The phenomenon of stuttering was recognized as far back as ancient Egypt (Wingate, 1997). Before the advent of a formal field of speech-language pathology, a multitude of theories and remedies existed for stuttering, some of which might be considered quite barbaric by modern standards. For example, in the second century, cauterization of the tongue was recommended in more severe cases of stuttering (Wingate, 1997). During the 1840's, German surgeon Johann Dieffenbach favored

removing a triangular piece of tissue at the base of the tongue, without anesthetic, to “cure” stuttering (Wingate, 1997).

The American Speech-Language Hearing Association (ASHA) was originally formed in 1925 as the American Academy of Speech Correction (Van Riper, 1981). During this era, two perspectives regarding the nature of stuttering were popular: the cerebral dominance theory developed by Samuel Orton, and theories based on Freudian psychology. Orton’s theory was based on the idea that, in order for smooth, fluent speech to occur, messages from one hemisphere of the brain must overcome messages from the other hemisphere in order to eliminate potential competition. When the brain sent a message to the speech musculature to activate, it did so through nerve tracts on both sides of the brain. In the 1920’s, it was believed that these messages were transmitted only contralaterally; in other words, messages from the left hemisphere were transmitted to the right side of the body and messages from the right hemisphere were transmitted to the left side of the body. Orton believed that, in people who lacked a dominant hemisphere, stuttering occurred due to the speech muscles attempting to simultaneously execute two competing messages (Manning, 2001).

The cerebral dominance theory was tested primarily by examining handedness. Since the left hemisphere was the dominant hemisphere for language in the majority of people (Brookshire, 2003) and the majority of people were right-handed, it was hypothesized that individuals who were left-handed or ambidextrous would have a higher incidence of stuttering (Van Riper, 1971). However, a large body of research on the theory yielded inconsistent results (Perkins, 1970). In addition, the medical community

discovered that although the brain hemispheres transfer information primarily contralaterally, both bilateral and homolateral motor tracts exist in the human brain (Duffy, 2005), a fact which challenged the basic premise of Orton's theory (Van Riper, 1971).

The Psychoanalytic Perspective

During this same era, speculation into a possible psychological cause of stuttering developed based on the work of Sigmund Freud. Early theorists of the psychological viewpoint thought that stutterers possessed an intrinsic personality which predisposed them to stutter. A number of authors performed psychoanalytical studies that found PWS to be more antisocial, introverted, and/or sensitive than the general population (Bender, 1942; Coriat, 1943; Richardson, 1944). Coriat (1943) took an especially Freudian approach, expressing his belief that stuttering was the manifestation of an oral fixation, associated with emotions of anxiety and fear.

Bender coined the term "stuttering personality" (1939). In 1942, Bender performed a study of 249 male college students who stuttered. The students reported that they experienced more frequent and longer periods of anxiety, were particularly anxious regarding oral communication, thought of themselves more as followers than leaders, and were more self-consciousness than students in a control group.

Similarly, in an analysis of personalities of adults who stuttered, Richardson (1944) found PWS to be more introverted, depressed, and less carefree than adults in the control group. Richardson, however, noted that there were a few limitations to the study: two of the tests employed in the study, the Rorschach and the Thematic Apperception

Test, were not designed for interpretation of group responses. In addition, responses to these types of tests are subject to the interpretation of the examiner.

Many of the studies on the personality of PWS were performed on adults. However, a few studies were performed on children. Meltzer (1944) performed a Rorschach study on 50 CWS and found that CWS had more "tendency to fantasy and withdrawal" than children in the control group. In addition, the CWS in her study exhibited more sensitivity and irritability.

Another psychoanalytically-based viewpoint was that stuttering was not due to the intrinsic personality of the PWS, but began as a reaction to domineering, neurotic parents. Snyder (1962), for example, stated that, in his many years of work with CWS at the National Hospital for Speech Disorders in New York, he observed mothers of young CWS to be particularly overbearing: "They tend to dominate their children to such a degree that it is difficult for the child to discover his identity and evolve his particular pattern of individuality" (p. 40-41). Notably, Travis, one of the primary proponents and researchers of the cerebral dominance theory, eventually came to accept the psychoanalytic approach. In 1957, he stated his belief that "could [stutterers] have had the greatest support from parents during the earliest weeks, months, and years of their lives, they would not have stuttered" (p. 918-919).

Both Snyder and Travis' assertions were in accordance with research performed by Despert (1946). Despert studied 50 children between the ages of 6 years 6 months and 15 years who were identified as stutterers and their parents. Her study included a case history, and physical, motor, and psychological examinations. Neurotic behavior was

noted in 31 of the mothers and 20 of the fathers. Specific examples of neurotic behavior included perfectionism, domination, and overprotection of their children. However, there were significant drawbacks to the study and Despert noted that the results were preliminary. First of all, no control group was included in the study and therefore the findings could not be interpreted for statistical significance. Secondly, though Despert recruited 50 CWS, five of the children were determined by examiners not to be exhibiting stuttering behavior yet were still included in the results. Lastly, despite the psychological findings, Despert noted that motor and physical examination of the children showed "there is evidence of dysfunction of the pyramidal and extrapyramidal systems, disturbance in the motor function and in vasomotor and neurovegetative systems" (p. 105). In other words, a physical cause for stuttering could not be ruled out.

Overall, a vast amount of research was done examining potential psychological underpinnings for stuttering. Sheehan (1970a) cited over 100 studies of PWS and/or their families performed from the 1930's - 1970, many of which involved CWS. The studies were varied in nature; some involved interpretation of Rorschach tests, some were based on parent interviews, some were based on personality tests. A few of the studies were based on responses to the Blacky Pictures Test, which examines, among other things, anal retentiveness and anal sadism.

Results from the studies were just as varied as their designs. For example, while a few studies found parents, particularly mothers, of CWS to be more domineering than parents of CWNS (Despert, 1946; Moncur, 1952; Silverman, 1952, all cited in Sheehan, 1970a), other studies found no significant differences between the two groups (Darley,

1955; Johnson, 1942). One study even found parents of CWS to be more submissive (LaFollette, 1956). The validity of many of these studies was questionable. For example, Sheehan noted that, in one study, the author found no significant differences between the Rorschach test results of CWS and CWNS, yet “the observation did not seem to prevent him from agreeing... that stutterers were basically obsessive-compulsive” (1970a, p. 69).

Despite contradictory evidence for psychological underpinnings of stuttering, some experts (e.g., Murphy, 1970; Sheehan, 1970b) advocated psychoanalysis as the only effective treatment for the disorder. For example, Sheehan likened PWS to an iceberg: “What people see and hear is the smaller portion; much greater is that which lies below the surface, experienced as fear, guilt, and anticipation of shame” (1970b, p. 13).

Sheehan felt that people who stutter did so because of conflicts in their personal identity, what he termed “self-role conflict” (1970b, p.4). He supported this idea with the observation that many PWS stutter less when they are alone, more when there is a crowd, and sometimes not at all in certain situations (e.g., acting in a play).

There is little evidence, however, that supports psychoanalysis as an effective form of stuttering therapy. Though advocates for this approach such as Coriat (1943), Glauber (1958), and Travis (1957) reported positive results (as cited in Bloodstein, 1995), their research did not include client follow-up to determine if their clients had maintained fluency. Brill (1923, as cited in Bloodstein, 1995), one of the few psychoanalysts to examine the maintenance effects of therapy, contacted 69 of his former patients 11 years post-treatment. Only five reported maintenance of fluency.

One theoretical issue that divided the psychoanalysts was whether a person was predisposed to stuttering or became a stutterer due to environmental factors. It was difficult to determine whether a person was predisposed to stuttering because most of the psychoanalytic studies were performed on adults (Sheehan, 1970a). Bender (1942) acknowledged that a genetic predisposition for stuttering could not be inferred from observations of adult PWS. He remained open to the idea that negative personality characteristics of PWS were compounded by societal reactions to the disorder; in other words, others' negative reactions to stuttering behavior worsened the psychological conflict in the already fragile PWS.

Van Riper, on the other hand, felt strongly that there was not an innate stuttering personality. He stated that:

stuttering represents the end result of a learning process.... at onset and for some years later, most stutterers do not show the features that are said to characterize neurosis. When they do appear, the "neurotic symptoms" stem from communicative frustration and social penalty. (1971, p. 272)

As Van Riper suggested, if stuttering occurs as a result of predetermined temperament, the anxiety associated with the stuttering personality should be evident in early childhood. Yet other authors have noted that this is not the case. For example, Yairi and Ambrose (2005), who performed longitudinal studies on 163 CWS, noted that:

clinicians and researchers who have frequent contact with young children who have just begun stuttering are usually impressed that a majority show no clear indications of even being aware of their speaking irregularities. Although some children do show signs of frustration with their speech, rarely do they evidence anxiety reactions to their stuttering or speech in general [as do adults who stutter]. (p. 11)

Johnson also noted that young children seemed unaware of their disfluencies. From his early research on the onset and development of stuttering (1942), he concluded that both CWS and their families were more similar than different to CWNS and their families. Johnson went on to develop the diagnosogenic theory, arguably the most influential theory regarding the onset of stuttering in children ever proposed.

The Diagnosogenic Theory

Johnson, like some of the psychoanalytic theorists, felt that parental reactions caused stuttering. However, Johnson did not believe that negative parental personalities caused stuttering, but that untrained parental ears misinterpreted normal childhood disfluencies as abnormal. He was well known for saying that stuttering began “not in the speaker's mouth but in the listener's ear” (1955, p. 11). Johnson (1959) hypothesized that, believing their child to be stuttering, parents began to react negatively to their child's speaking attempts, which in turn caused an anxiety reaction that worsened the disfluencies until they became pathological.

Johnson supported his theory with a series of research studies performed in the 1930's. In his initial study, he and his students at the University of Iowa interviewed and observed 46 CWS and their families, and 46 CWNS in a control group. For 92% of the CWS in his study, he concluded that:

the speech phenomena originally diagnosed or labeled as stuttering consisted... of effortless, brief repetitions of syllables (that is, parts of words), whole words, or phrases, repetitions of which the child was evidently unaware. These phenomena would appear, on the basis of data reported by Davis, to be normal. (1955, p. 70)

In 1959, Johnson and his colleagues drew similar conclusions from a larger study they performed on a group of 150 CWS and their families and 150 CWNS in a control group.

Darley, one of Johnson's students, reinforced the diagnosogenic theory in his research (Johnson, 1955). Darley administered interviews consisting of 846 questions to 50 families of CWS and to a control group. Overall, he found the families of CWS and CWNS to be more similar than different. Darley did note that parents of CWS often had difficulty remembering the date or events surrounding the onset of their child's stuttering behaviors. Because of this, he concluded that "one nevertheless begins to suspect that in the majority of cases the speech phenomena the parents have in mind when they speak of noticing 'stuttering' must have been rather subtle or indistinguishable from normal speech" (p. 135). He determined that 48 of the 50 parents of CWS were mistakenly reporting speech behavior that he deemed "normal nonfluencies" (p. 151).

Despite the popularity of the diagnosogenic theory, not all clinicians agreed with Johnson's conclusions. Both Van Riper, a contemporary of Johnson's, and Bloodstein, a student of Johnson's, expressed difficulty accepting that the behaviors being exhibited by young CWS were in fact normal. Based on an unfinished study on which he worked in the 1930's, Van Riper reported being convinced that CWS were indeed exhibiting abnormal speech behaviors (1992). He shared this information with Johnson, but Johnson was reportedly skeptical of Van Riper's findings. Bloodstein (1986) recalled how, as a young clinician, he became dissatisfied with telling parents of CWNS that their children were speaking normally. The parents' "reactions to this were much like the helpless reactions of almost anyone who has gone to the doctor with a pain to be told that there is nothing wrong" (p. 137). He eventually decided empathy was more helpful to the parents of these young children than telling them to ignore their child's behaviors.

Though Johnson had compiled the most comprehensive data on the onset of stuttering available at the time, there were a number of theoretical and methodological problems with his research. For example, Johnson's theory is based on the idea that children labeled as stuttering are really just exhibiting normal childhood disfluencies. Johnson concluded from his findings that CWS were identified so mistakenly. Yet in that same research, the total disfluency of CWS was more than double that of the control group: an average of 18 out of 100 words as compared to 7 out of 100 words by the control group (Yairi & Ambrose, 2005), a noticeable difference. In other words, Johnson's results did not support his interpretation.

Johnson based his notions of what were considered normal disfluencies on the work of Davis (1939), who concluded that "repetition is part of the speech pattern of all children" (p. 47). However, though she did not state the number of children so identified, Davis implied that some of her subjects had been reported previously to stutter, which may have skewed her results. Both Johnson and Darley's research had the same design flaw: they included children that were reported to have spontaneously recovered from stuttering in their control groups (Yairi and Ambrose, 2005).

Wingate challenged Johnson's assertion that CWS were exhibiting the same types of disfluencies as CWNS. In 1962, he reviewed the literature regarding the assumption that normal children experience frequent disfluency. His findings refuted the idea that children labeled as stuttering were actually exhibiting normal behavior. In the studies he reviewed, CWS showed many more part-word and syllable repetitions, prolongations, and blocks. He concluded that:

certain kinds of fluency irregularities are found much more frequently in children “identified as stutterers” and also are quite consistently identified as not normal, whereas other kinds of fluency irregularities are characteristic of nonstutterers and also are quite consistently identified as normal. (p. 177)

Research by Yairi and his colleagues reinforced Wingate’s conclusions. Their research showed that, although most young children with normal speech experience a variety of disfluencies, their disfluencies differed both qualitatively and quantitatively from those of CWS (Ambrose & Yairi, 1999; Yairi, 1981; Yairi & Lewis, 1984). CWS exhibited more total disfluencies in their speech than CWNS (Yairi & Lewis, 1984), as well as more part-word and single-syllable word repetitions, more units of repetition (e.g., “*mo-mo-mo-mother*” versus “*mo-mother*”), and more instances of prolongation, blocks, and broken words (Ambrose & Yairi, 1999).

Another problem with the diagnosogenic theory is that, if Johnson’s idea that negative parental responses conditioned the child to develop stuttering behaviors, then one would expect to see stuttering develop gradually, as opposed to a sudden onset. However, gradual onset was not always the case. For example, after a review of 44 charts of CWS, Van Riper (1971) determined that 11 children developed stuttering symptoms quite suddenly.

Another potential methodological problem with Johnson’s research was the amount of time that had lapsed between the onset of stuttering and when he interviewed his subjects’ parents. Bloodstein (1986) explained that both Johnson and Darley’s research used parent descriptions, which could be unreliable, and in some cases were given long after onset. For example, the age range of subjects in Johnson’s 1959 study was between 2 years 3 months and 8 years. Johnson (1959) reported that the age of

stuttering onset for many of his subjects was during their third year. The accuracy of a parent's recollection of what an eight-year-old did at age three is questionable (Yairi and Ambrose, 2005).

In 1989, Zebrowski and Conture examined the ability of mothers of CWS to differentiate between simulated dysfluencies and normal speech as presented on an audio tape. This study was different than the studies performed by Johnson and Darley because the parents in Zebrowski and Conture's study had children who were only recently identified as stuttering. The authors posited that, because the children of the mothers examined in Johnson's and Darley's studies were often many years post-onset of stuttering, the mothers' responses may have been skewed due to many years of experience with and reactions to their child's disfluent speech. Zebrowski and Conture found that mothers whose children had recently been diagnosed as stutterers identified stuttering equally as well as mothers of CWNS. More importantly, mothers of CWS did not misdiagnose stuttering in children with normal speech. These results refuted Johnson's claim that parents of CWS had initially misdiagnosed normal disfluencies as stuttering.

One last contradiction to Johnson's theory lay in the research of one of Johnson's own students, Mary Tudor. It was under Johnson's mentorship that Tudor completed what is often referred to as the Monster Study (Reynolds, 2006), arguably one of the most unethical research studies ever performed in the field of speech-language pathology. One reason Tudor's study was considered unethical was because it was performed on children

at an orphanage, where there was no need for parental consent. Likewise, the goals of the study were not disclosed to orphanage employees (Ambrose & Yairi, 2002).

Tudor's research had two aims: first, she wanted to show that stuttering could be induced in children who had not previously exhibited abnormal speech symptoms by telling them, falsely, that they stuttered. Secondly, she wanted to show that children identified as stutterers would stop their abnormal speech behaviors if they were consistently told that they spoke normally (Reynolds, 2006).

In 2001, a series of articles published in *The San Jose Mercury News* exposed the Tudor study to the general public. In these articles, author James Dyer reported that Tudor had succeeded in inducing stuttering in children previously identified as having normal speech (as cited in Yairi, 2006). If one reviews the results of the study, however, this statement is false. Though Tudor did elicit "behavioral changes" (Tudor, 1939, as cited in Reynolds, 2006, p. 9) in her subjects, their speech remained normal. Reynolds (2006) gave the following summary of Tudor's findings:

Of the six normal children who were falsely labeled as individuals who stutter, two actually improved their speech fluency, according to the researcher's ratings, over the course of the five-month study- one by almost a full point, from 3 to 3.8. Another's fluency rose from 3 to 3.6. For two others, their fluency ratings didn't budge. Of the two children whose fluency fell, one... dropped from 2.6 to 2, the second..., from 3.1 to 2.8. (p. 8)

Thus, Tudor was not able to produce stuttering in children previously identified as normal speakers. Her research did not support Johnson's claim that stuttering was caused by an incorrect parental diagnosis.

Despite a large body of evidence that contradicted Johnson's theory, therapy techniques based on the diagnosogenic approach remain popular today (e.g., Guitar &

Conture, 2008). Treatments using a diagnosogenic approach were based on the idea that disfluencies should not be called to the child's attention, and were therefore referred to as indirect treatments. Indirect treatments involved parental modifications of the child's speaking environment. Examples include educating parents to slow their speech rate when speaking with their child, encourage uninterrupted turn-taking, and decrease syntactically complex language that may be difficult for a child to understand.

However, the research on the effectiveness of indirect treatment has been inconclusive. One indirect approach that is widely recommended is parent modification of speech rate. Though research shows that this approach can be effective in reducing disfluencies, the reason is unclear. For example, Guitar and Marchinkowski (2001) found that CWS decrease their speaking rate in response to a parent's slower rate. Bernstein Ratner (2004), however, cited studies that showed parents of CWS did not normally use a faster speech rate than parents of CWNS, though they sometimes increased their rate in response to their child's stuttering.

Despite the drawbacks to the diagnosogenic theory and its associated treatments, it was the dominant theory about the onset of stuttering for many years and continues to influence the field of speech-language pathology today, as does the psychoanalytic approach. Both the diagnosogenic and psychoanalytic approaches shared many assumptions. For example, Johnson, like many of those in the psychoanalytic camp, believed that stuttering was a learned behavior. If the behavior was learned, it could be modified therapeutically.

However, the two approaches differed in their views on therapy. As stated above, many believers of the psychodynamic approach believed that psychoanalysis was the preferred treatment for stuttering. Johnson, on the other hand, preferred therapy based on radical behaviorism as described by Skinner (1957). Whereas psychoanalysts believed in addressing the underlying causes of behaviors, Johnson and his followers were only interested in modifying outwardly observable behaviors. This philosophy laid the foundation for the next era of research in stuttering treatment: the era of operant conditioning.

Stuttering as Operant Behavior

Operant behavior is defined as “that behavior whose frequency or probability of occurrence is influenced by the consequences it generates” (Shames & Egolf, 1976, p. 20). Operant conditioning theory differs from that of classical conditioning theory in a few ways. Classical conditioning, the theory that Pavlov developed from observations of his dogs’ reaction to a dinner bell, results in behavior that is both involuntary and has a clear antecedent. Operant conditioning, however, results in behavior that is voluntary and is not concerned with antecedents but consequences.

Operant conditioning theory, as described by Skinner (1957), uses a specific terminology. A response, or observable event (e.g., stuttered speech), can be followed by one of the following four consequences: positive reinforcement, negative reinforcement, extinction, or punishment (Shames & Egolf, 1976, p. 23). Positive reinforcement occurs when something is presented as a reward for a desired behavior, thus increasing the likelihood that the behavior will be repeated. Negative reinforcement also increases the

likelihood of a desired behavior, but by removing an unpleasant condition when the subject produces the desired behavior.

Both extinction and punishment decrease the likelihood of a behavior. Though the word punishment has negative connotations in everyday language, it was defined by behaviorists as a particular type of response to an event. Flanagan (1986) stated, “Punishment involves the behavioral control that results when a response is followed by an aversive event” (p. 224). Punishment occurs when, as a consequence to an undesired behavior, either something unpleasant is presented or something positive is removed. Extinction, on the other hand, decreases the likelihood of an undesired behavior by ignoring the behavior completely.

Reinforcement schedules are another critical aspect of operant conditioning theory. Positive reinforcement, negative reinforcement, and punishment may all be delivered on either a continuous or intermittent schedule of reinforcement. In other words, reinforcement may be delivered after a behavior always or just occasionally. It is important to note that continuous reinforcement schedules are useful when attempting to shape new behaviors, whereas intermittent reinforcement is more effective at either increasing or decreasing behaviors that are already habitual, such as stuttering (Roth & Worthington, 2005).

Operant theorists sought to prove that stuttering was a learned behavior by showing that PWS would increase stuttering if positively or negatively reinforced, and decrease their stuttering behaviors if extinguished or punished. In 1958, Flanagan, Goldiamond, and Azrin published a study on the effects of operant conditioning on three

adults who stuttered. When the subjects were presented with a punishment consequence after stuttering (in this instance a loud, high-pitched tone), the rate of stuttering decreased. When the subjects were presented with a negative reinforcer after stuttering (in this instance *removal* of a continuous loud, high-pitched tone), the rate of stuttering increased. The authors concluded that stuttering was an operant behavior.

Shames and Sherrick also favored a purely operant explanation for stuttering. They believed that stuttering in children began as a result of reinforcement of normal disfluency. In a 1963 article, they give a set of 10 possible stimulus-response-consequence chains associated with both normal and abnormal disfluency. The authors advocated stuttering rehabilitation by placing the PWS in "an isolated environment where all variables are systematically introduced", much like patients in a hospital (p. 246). They also advocated parent education on how to avoid reinforcing stuttering behaviors.

In 1972, Martin, Kuhl, and Haroldson demonstrated that extinction decreased stuttering in two preschoolers. The subjects in the study interacted with a puppet. When the subject exhibited stuttering behavior, the puppet "ignored" the child for ten seconds. Both subjects exhibited significantly reduced stuttering behaviors, one after 25 sessions and one after 40 sessions with the puppet. The authors reported that the children had maintained normal fluency a year after the study. However, the authors did note that the study was particularly small, and that the reduction of stuttering due to normal maturation could not be ruled out.

Though these studies pointed toward operant conditioning as a useful treatment for stuttering, they did little to explain how stuttering emerged in the first place. A few

authors had difficulty accepting that stuttering at its onset was operantly conditioned. For example, Van Riper (1971) noted that, for an operant behaviorist, the types of disfluencies more commonly exhibited by CWS (e.g., syllabic repetitions and prolongations) must somehow have been reinforced more than other types of disfluencies. He questioned the likelihood of this occurrence. More than three decades later, Bernstein Ratner (2005) echoed Van Riper's concerns: "punishment of the stuttered moment (or time-out from positive reinforcement) does not easily map onto our understanding of the mechanisms that produce or prevent children's stuttered events" (p. 175).

The results of two studies performed in the 1970's challenged the operant approach to stuttering. In 1970, Cooper, Cady, and Robbins performed a study in which 14 adolescent and young adult PWS were asked to read aloud. Every time they stuttered, the subjects were either verbally presented with the word "right" (i.e., positive feedback), "wrong" (i.e., punishment), or "tree" (i.e., a neutral stimulus). According to the theory, positively reinforced behaviors should have increased whereas punished behaviors should have decreased. However, stuttering behaviors decreased in all cases.

A few authors attempted to explain the results of the Cooper et al. (1970) study within the parameters of operant behavior. For example, Bloodstein (1995) suggested that all response-contingent words used in the study could have been categorized as punishment. On the other hand, a number of authors had been suspicious of operant conditioning as a treatment for stuttering for some time, as noted by Daly and Kimbarow (1978). For example, Wingate (1959), Biggs & Sheehan (1969), and Cross and Cooper

(1976) all believed that decreases in stuttering that appeared to be caused by operant means were actually just the result of “calling the speakers’ attention to their disfluencies” (Daly & Kimbarow, 1978, p. 595).

Daly and Kimbarow (1978) replicated the Cooper, Cady, and Robbins (1970) study with school-age children. They, too, expressed skepticism about interpreting their findings in operant terms. They wrote, “Perhaps in their enthusiasm to liken stuttering phenomena to learning responses, researchers have glossed over subtle, but significant information. Perhaps students of stuttering have been too prejudiced by learning theory models” (p. 596).

Despite contradictory evidence, therapies for young CWS based on operant conditioning were the most widely researched and in most cases were found to be effective. Bothe, Davidow, Bramlett, and Ingham (2006) reviewed stuttering treatment research done from 1970 – 2005 for “methodological quality” (p. 321). Of the research they determined to be of sound scientific evidence, only nine were performed exclusively on subjects under the age of seven. One study found language training (Butcher, McFadden, Quinn, & Ryan, 2003) to be ineffective as a treatment for CWS. The other eight studies all examined response-contingent treatments based on principles of operant conditioning. All eight studies found these treatments to be effective when used with young children.

The most promising of the response-contingent treatment programs was the Lidcombe program. In the review by Bothe et al. (2006) six of the eight studies that

found response-contingent therapy to be effective employed the Lidcombe program. A simplified explanation of the Lidcombe program was described by Jones et al. (2005):

Throughout the programme, parents provide verbal contingencies for periods of stutter free speech and for moments of stuttering. This occurs in conversational exchanges with the child in the child's natural environment. The contingencies for stutter free speech are acknowledgment ("That was smooth"), praise ("That was good talking"), and request for self evaluation ("Were there any bumpy words then?"). The contingencies for unambiguous stuttering are acknowledgement ("That was a bit bumpy") and request for self-correction ("Can you say that again?"). The programme is conducted under the guidance of a speech pathologist. (p. 660)

Parents are also asked to rate the severity of their child's stuttering on a daily basis (Harrison, Onslow, & Menzies, 2004).

The Lidcombe program is the only treatment for preschoolers to be investigated through a randomized control trial (RCT). RCTs are considered by the United States Preventive Services Task Force to be the "gold standard" of research design (as cited in Ingham, 2003, p. 199). In 2005, Jones et al. performed a randomized control study designed to demonstrate that the rate of success of the Lidcombe program was greater than that of the natural recovery rate alone. Of their 54 preschool-aged subjects, 29 received the Lidcombe treatment and 25 were assigned to a control group for a nine-month period. Treatment with the Lidcombe program decreased stuttering behaviors by a statistically significant amount when compared to the natural recovery rates of the control group children. Lattermann, Euler, and Neumann (2008) replicated these results in German preschoolers.

However, the Lidcombe program consists of many components and researchers cannot be sure what aspects of the program are responsible for its efficacy. Onslow and

Packman (1999) named 17 daily tasks required of parents during treatment with the Lidcombe program. Bernstein Ratner (2005) voiced a number of concerns about the assumptions behind the Lidcombe program. She stated, “I do believe that the program works for the majority of children who have been enrolled thus far. But I do not understand why it works, or why it should work” (p. 177). For example, she echoed the concern voiced by Daly and Kimbarow (1978) that operantly-based treatment programs can be viewed in theoretical frameworks other than operant conditioning. She stated that positive results of Lidcombe treatment could be due to “manipulation of linguistic demand” (p. 175), or reductions in parent and child anxiety, rather than the effects of operant conditioning.

Only one study to date has examined the effectiveness of individual components of the Lidcombe program. Harrison et al. (2004) performed a study which compared the reduction in stuttering for 38 children using individual components of the Lidcombe program. The children in this study were divided into “cells”; approximately a quarter of the children received the normal Lidcombe program, a quarter were treated via parental contingencies only, a quarter were treated via parental stuttering severity ratings only, and a quarter received no treatment at all. They concluded that parental contingencies were more effective than parental severity ratings in the reduction of stuttering behaviors.

A few words about what constitutes evidence: Although RCTs are considered the “gold standard” of research design, performing RCTs in the field of speech-language pathology is not always possible for a number of reasons; for example, ethical concerns and difficulty in controlling for extraneous variables (Bernstein Ratner, 2005; Conture,

1999; Starkweather, 1999). Though not as strong as RCTs, other research designs exist that are considered methodologically sound. Conture (1999), for example, suggested that matched randomized pretest-posttest control group studies and ABA time series studies provide strong evidence and are more applicable to research in the field of speech-language pathology.

In addition, it should be noted that the commitment to evidence-based practice in the field of speech-language pathology is relatively new. Many past research studies on effectiveness of particular stuttering treatments are not considered methodologically sound by today's standards (Bothe et al., 2006). ASHA (1995) acknowledged the current gap between common practice and evidence in stuttering therapy, stating that "a set of criteria for determining guidelines [for stuttering treatment] that was based entirely on empirical evidence would be too restrictive. Some treatment practices may be quite useful even though their efficacy has not yet been determined empirically" (p. 1). While the importance of evidence for stuttering treatments should not be downplayed, a lack of research data for treatments that have been used historically does not mean that the treatments are ineffective.

The Search for a Genetic Link

The observation of a genetic component to stuttering challenged the operant approach, as well as psychological and diagnosogenic approaches. Observations about potential genetic links for stuttering predated the 1930's. For example, a 1930 White House conference report on handicapped children reported that stuttering was more common in males than females (as cited in Bender, 1939). Observations regarding a

potential genetic component, however, were largely ignored by the followers of the diagnosogenic and operant theories. For example, Johnson noted in one of his studies that 23.3% of the subjects' parents had a history of stuttering, compared to 5.3% of the control groups' parents (1959). Though Johnson stated that this could be due to a hereditary cause, he preferred the explanation that this phenomenon occurred due to "attitudes that are passed on from generation to generation" (p. 225).

By the 1960's, however, some researchers could no longer ignore a potential hereditary connection. In 1964, Andrews and Harris (as cited in Yairi & Ambrose, 2005) published the results of a large longitudinal study on CWS. A portion of their research was devoted to an aggregation study, an analysis of family members' histories to determine the incidence of a particular trait within the family. Their aggregation study found that male children with a father or brother who stuttered had a higher risk of stuttering themselves. In the 1970's and 80's Kidd and his colleagues performed a number of studies on potential links between genetics and stuttering. The results of their aggregation studies concurred with the results reported by Andrews and Harris (Kidd, 1980).

Some of the most convincing research regarding heredity and stuttering was performed on twins. A number of comparative studies of monozygotic (i.e., identical) and dizygotic (i.e., fraternal) twins consistently showed a higher concordance for stuttering in monozygotic (MZ) twins than in dizygotic (DZ) twins (see review in Howie, 1981). However, early studies had a number of methodological problems; for example, both same- and opposite- sex DZ twins were included.

Howie (1981) was the first researcher to perform a comparative twin study where zygosity was determined through blood testing. Howie found concordance for stuttering in 63% of MZ twins and only 19% of DZ twins. Though these results point towards a link between heredity and stuttering, Howie noted that the data also showed that "genetic factors alone are clearly not sufficient to produce stuttering" (p. 320). Kidd (1980) stated that the observation that MZ twins did not evidence a 100% concordance "proves that an identical genetic constitution does not always result in the same behavioral disorder" (p. 188). In other words, stuttering did not follow an inheritance pattern that would be expected of a purely genetic disorder.

Later twin studies by Andrews, Morris-Yates, Howie, and Martin (1991), Felsenfeld et al. (2000), and Dworzynski, Remington, Rijdsdijk, Howell, and Plomin (2007) were performed on large samples of twins. Zygosity was determined in these studies through a questionnaire about physical similarities between the twins, a method which was shown to be 95% accurate (Martin & Martin, 1975). Methodology varied slightly from study to study; for example, Felsenfeld et al. (2000) analyzed questionnaires completed by adults who stuttered, whereas Dworzynski et al. (2007) analyzed questionnaires completed by parents of young twins. However, like Howie (1981), all of the studies found higher rates of MZ concordance than DZ concordance for stuttering.

There were a number of potential methodological problems with twin studies. As stated above, some of the studies examined both same- and opposite- sex DZ twins whereas MZ twins are always same sex. Booth (1999) noted a number of other difficulties with this type of research. For example, if one twin had recovered from

previous stuttering, the parents might falsely report the child as never having stuttered, causing the twin pair to be listed as discordant. Another example was the failure of researchers to compare pre- and peri- natal environments of children in a twin pair.

One final drawback of the aforementioned studies was that they could not definitively disprove Johnson's assertion that stuttering was more common in families due to environmental factors; in other words, familial attitudes about speaking (Yairi, Ambrose, & Cox, 1996). Because the twin studies performed by Howie (1981), Andrews et al. (1991), Felsenfeld et al. (2000), and Dworzynski et al. (2007) were performed on twins living in the same household as their biological parents, this assertion could not be ruled out. Felsenfeld and Plomin's 1997 study on adopted twins, however, did disprove Johnson's idea. The authors performed logistic regression analyses on questionnaires completed as part of the Colorado adoption project. They found that children whose biological parent had a speech, language, and/or fluency disorder had the same risk of developing a disorder whether they were raised by the biological parent or by adoptive parents. In other words, genetic makeup played a more important role in the inheritance of a fluency disorder than living in an environment where family members held negative attitudes regarding speech.

More evidence for a genetic component to stuttering came from aggregation studies. As stated above, early aggregation studies were performed by Andrews and Harris (1964), and by Kidd and his colleagues in the 1970's and 80's. More recent aggregation studies were performed by Ambrose, Yairi, and Cox (1993) and Viswanath, Lee, and Chakraborty (2004). Ambrose et al. (1993) collected their data on 69 CWS who

ranged in age from 2 years 1 month to 6 years 3 months. They found that 71% of their subjects had a positive family history of stuttering. Viswanath et al. (2004) performed a complex segregation analysis on 56 adults who stuttered. 84% of the subjects in their study had family members that stuttered; this rate was 10 times that of the general population.

As was true of twin studies, a number of methodological problems existed in aggregation studies. First, data was obtained by questionnaires and interviews, which are subjective measures. Secondly, as Kidd (1980) pointed out, the size of families included in the studies varied. In other words, the likelihood of having offspring who expressed the stuttering gene was less in small families than in large ones.

In the 1990's, advances in genome sequencing added another component to genetic research on stuttering. Linkage analysis studies attempted to identify the specific genes responsible for inheritance of a disorder, with mixed results (Riaz et al., 2005; Shugart et al., 2004; Suresh et al., 2006; Wittke-Thompson et al., 2007). The results of each study identified different chromosome combinations as possible genetic links for stuttering. Most of the studies failed to find evidence that was statistically significant. The exception was the study by Suresh et al. (2004), which found a statistically significant link on chromosome 7 in males who stutter.

Why were the results of genetic linkage studies so different? Over two decades ago, Kidd (1980) observed:

many disorders thought to be a single defect have been shown to arise independently from defects at different loci. They all appear the same because, though the defects are different, the consequences of the defects are channeled

through developmental or functional systems so that the ultimate symptoms appear the same. (p. 190)

Wittke-Thompson et al. (2008) echoed this position, when they noted the difficulty in performing linkage studies on complex disorders, such as stuttering, due to potential “etiologic and genetic heterogeneity, complex genetic models with many contributing loci of varying effects, gene by gene interaction, and gene by environment interaction” (p. 35). In other words, the genes associated with stuttering may vary from population to population, family to family, and individual to individual.

Even if scientists discovered a specific genetic link for stuttering, how would that information help SLPs? Possessing a gene for stuttering does not necessarily mean a person will develop stuttering. Yairi and Ambrose (2005) noted that genes merely predispose a person towards a particular disorder. Actual observable behaviors are expressed when those particular genetic traits interact with a person’s unique environment, a concept often referred to as genotype versus phenotype.

Yairi and Ambrose’s observation was not new. Decades before, researchers had speculated that stuttering was the result of both hereditary and genetic factors. For example, in the late 1960’s Brutten and Shoemaker (as cited in Brutten, 1970) explained stuttering in terms of a two-factor model. They felt that some aspects of stuttering were classically conditioned and therefore involuntary. For example, many PWS had reported anxiety related to the anticipation of saying certain sounds upon which they have commonly stuttered in the past (Brutten, 1970). Other aspects of stuttering were believed to be operantly conditioned and voluntary, such as avoidance behaviors.

Multi-Factorial Approaches

In light of a growing body of research that stuttering could be attributed to both environment and heredity, a number of authors proposed multifactorial frameworks for the onset of stuttering (Manning, 2001). Some researchers have attempted to determine quantitatively how much the presence of stuttering is determined by genes and how much by environment. Andrews et al. (1991) performed a statistical analysis of previously performed twin studies and found that 71% of stuttering could be attributed to "additive genetic variance" (p. 1034) and 29% to environment. Felsenfeld et al. (2000) replicated these numbers in their study.

One of the most well-known of the multi-factorial frameworks, the Demands and Capacities model (DCM) was originally developed by Starkweather and his colleagues in the late 1980's (Adams, 1990). The DCM states that fluent speech "breaks down when environmental and/or self-imposed demands exceed the speaker's cognitive, linguistic, motoric and/or emotional capacities for responding" (Adams, 1990, p. 136-37). The DCM was not designed to be a theory of etiology so much as "a way of organizing what is known about the development of fluency and stuttering in children" (Starkweather & Gottwald, 1990, p. 143); however, it is often used as an etiological model when counseling parents of CWS (Manning, 2000).

A few studies have investigated the effectiveness of treatment programs based on the DCM. Gottwald and Starkweather (1995) described a treatment program designed for the preschool population. The authors advocated educating family members and teachers on how to decrease linguistic demands in ways such as decreasing their rate of

speech, allowing increased time for conversational turn-taking, and openly acknowledging the child's speech difficulties. They also recommended ways to increase the child's capacity for fluency. For example, the authors discussed how fluency-shaping techniques could be taught to children. Though they have not been evaluated as stringently as the Lidcombe program, fluency-shaping techniques, such as prolonged speech and Ryan's Gradual Increase in Length and Complexity of Utterance program (GILCU), have been shown to be an effective treatment in PWS age seven and older (Bothe et al., 2006).

In a two-year follow-up interview, Gottwald and Starkweather (1995) claimed that families of all 45 children who completed their program reported fluency maintenance. However, the authors have never published empirical evidence of this claim. Ingham and Cordes (1999) criticized Gottwald and Starkweather's failure to support their claims scientifically: "These ... bits of information appear to constitute the complete account of the treatment program's evaluation; no speech performance data are reported" (p. 215).

In 2005, Franken, Kielska-Van der Schalk, and Boelens reported success using a DCM based treatment. They examined whether a DCM based program was as effective as the Lidcombe program in treating stuttering in children under six years of age. Though the study was small, it showed promising results for the children that received DCM based therapy. Both the Lidcombe program and DCM based treatments showed comparable improvements in the child's stuttering from an average of 4.0% stuttered syllables before treatment to approximately 1.5% after treatment. Parents of the subjects

gave both programs similarly high ratings when questioned about program components such as degree of difficulty and structure.

Yaruss, Coleman, and Hammer (2006) recently investigated the Family-Focused treatment program, which is partially based on the DCM, with inconclusive results. The Family-Focused program began with an indirect, parent-child portion (e.g., education about stuttering and indirect ways to foster fluency). A direct portion was implemented later in the course of treatment sessions if needed (e.g., stuttering modification and desensitization). In their preliminary study, the authors focused their investigation solely on the indirect, parent-child portion of the program, which included teaching parents how to reduce communication demands as described by the DCM. Sixty-four percent of the children, who ranged in age from 2 years 7 months to 5 years 2 months, were able to be dismissed after the parent-child portion was completed. Because approximately 70% of children will recover from stuttering spontaneously, these results did not rule out that stuttering reduction was due to natural recovery. However, all but one of the remaining children were dismissed following the direct treatment portion.

Packman, Onslow, and Attanasio (2004) criticized the DCM for a number of reasons. One reason is that treatments known to be effective in treating childhood stuttering, such as the Lidcombe program, presumably increase demands. Another criticism was that followers of the DCM advocated using more simplified language around CWS, advice which has been called into question. Bernstein Ratner (2004) noted that, although fluency breakdowns in children are commonly seen when the child is attempting to use more complex language, advising parents to model less complex

language to their children could be detrimental. She stated that “in studies of both normal and disordered child language function, a rich level of parental language input is generally construed to be a positive attribute because it potentially facilitates children’s language mastery” (p. 50). She cited studies by Huttenlocher (1998) and Newport, Gletman, and Gletman (1977) that showed “when parental language input is simpler, children show slower and diminished language growth” (p. 52).

To summarize, over the years there have been many theories about the etiology of stuttering, but experts are still unsure as to the true cause of the disorder. Perhaps Smith and Weber (1988) said it best when they stated “Our perspective on stuttering, then, is that there are too many perspectives on stuttering” (p. 5). With each theory of etiology followed a different treatment philosophy. Many of these theories and treatments were later shown to be ineffective.

The Decline of Education in Fluency Disorders

When the cause of a disorder is unknown and potential treatment options vary widely, how does a SLP choose the best method to help the client? The foundation of knowledge in speech-language pathology lies in graduate school education. However, a number of studies performed in the 1990’s showed that fluency education in speech-language pathology programs across the United States was in decline. Yaruss and Quesal (2002) surveyed speech-language pathology graduate school programs in the United States in both 1997 and 2000. In 1997, the percentage of schools that allowed students to graduate without either classes or clinical experience with PWS was already high: 18%

and 59% respectively. In their follow-up survey in 2000, these numbers had increased to 27% and 65% respectively.

Brisk et al. (1997) speculated that graduate education for fluency was in decline because stuttering was a disorder of relatively low prevalence. As previously discussed, the number of people that exhibit stuttering at any given time is only approximately 1% of the population (Bloodstein, 1995). In one survey, the caseloads of school-based SLPs ranged from 23 to 125 clients, yet no one caseload reported in the survey contained more than 12 CWS (Kelly et al., 1997). A few caseloads contained no CWS. Kelly et al. (1997) noted that many respondents to their survey “commented that the burgeoning field of speech-language pathology makes it impossible to obtain sufficient course work in any individual specialty area” (p. 202). In other words, when graduate schools are required to train SLPs to be competent treating a wide range of disorders, it follows that education will focus more on diagnoses that are of higher incidence.

Yaruss and Quesal (2002) attributed the decline in fluency education to changes in graduate education standards set by ASHA. In 1993, ASHA eliminated the mandatory fluency course work and practicum requirements for completion of a graduate program in speech-language pathology (Brisk et al., 1997). Before the requirements were eliminated, St. Louis and Durrenberger (1993) had found that stuttering was one of the least popular disorders to treat. One can speculate that, with the decrease in educational experiences available to clinicians who have graduated since 1993, clinician confidence in treating stuttering has further continued to decrease. Indeed, studies by Brisk et al.

(1997), Cooper and Cooper (1996), and Kelly et al. (1997) completed after the 1993 ASHA changes pointed toward this trend.

In 2005, ASHA again modified their standards for graduate student training, but the standards remained vague and open to interpretation when it came to the amount of time devoted to education and clinical experience in fluency disorders. Graduates were required to demonstrate knowledge of the nature, evaluation, and treatment of all communicative disorders, including fluency disorders, through course work, “clinical experiences, independent studies, and research projects” (American Speech-Language-Hearing Association, 2005a, p. 5). However, ASHA did not specify the amount of course work or clinical experience that meets these standards. Under these standards, a graduate in speech-language pathology could potentially be granted a Certificate of Clinical Competence in speech-language pathology (CCC-SLP) through ASHA with only minimal exposure to fluency disorders.

The trend toward offering less educational and/or clinical opportunities in fluency disorders caused concern among a number of fluency experts (St. Louis & Durrenberger, 1993; Yaruss & Quesal, 2002). St. Louis and Durrenberger (1993), for example, speculated that clinicians felt uncomfortable treating disorders in which they lacked “training and experience” (p. 27). In contrast, they found that “clinicians who listed fluency... as most preferred were more likely to have experience in the general area” (p. 27).

In 1995, Sommers and Caruso suggested that continuing education on treating CWS was a good way to make up for a lack of training in graduate school. Yet Brisk et

al. (1997) found that school-based clinicians do not seem interested in seeking out continuing education opportunities in stuttering, despite feeling under-prepared to treat the disorder. When asked if they would attend fluency-related continuing education courses in the next year, only 31% of those surveyed answered affirmatively.

Additionally, the number of continuing education courses available in fluency topics is sometimes limited. Only 31% of respondents to the survey by Brisk et al. (1997) felt that their state speech-language-hearing association offered adequate continuing education courses in fluency topics. A search for continuing education courses on the ASHA website reinforced this notion. In a search for courses offered by ASHA approved continuing education providers in the United States and Canada between 7/13/2008 to 12/31/2008, five courses were offered on fluency disorders, compared to 120 courses being offered on autism (American Speech-Language Hearing Association, 2008). Though other opportunities for continuing education in fluency topics are available through distance learning programs (140 were listed in fluency during the same time period, compared to 160 in autism), a SLP looking for additional hands-on education in fluency would be hard-pressed to find a course in his or her region.

Another consequence of the lack of education and training in fluency disorders was that theories that were either disproven or unsupported by evidence continued to proliferate. Researchers have often claimed that “clinicians employ practices with dubious roots to either efficacy or basic research in stuttering” (Bernstein Ratner & Healey, 1999, p. 1). For example, though questions about the validity of Johnson’s diagnosogenic theory appeared in the literature as early as the 1960’s (Wingate, 1962),

Cooper and Cooper (1996) found that 45% of clinicians surveyed still believed that “using the words ‘stutterers’ or ‘stuttering’” should be avoided when treating young children.” (p. 121). Cooper and Cooper (1996) also found that many clinicians continue to feel there is a psychosocial etiology for stuttering. For example, over 10% of clinicians that responded to the survey felt that parents of CWS contributed to the development of the disorder, though the number of clinicians who reported this belief substantially decreased from 1983 to 1991. Over 50% of respondents also felt that there were certain personality traits possessed by individuals who stutter.

A Lack of Counseling Preparation

Any review of the components of treating fluency disorders should include a discussion of preparation in counseling. Cooper and Cooper (1996) found that 84% of surveyed clinicians feel “of the various speech disorders, stuttering is perhaps the most psychologically devastating for the individual” (p. 124). Likewise, Crowe (1997) wrote that “counseling is at times the primary technique used in treating communicative disorders, particularly voice and fluency disorders” (p. 22).

Yet, SLPs currently receive little training in counseling techniques (Culpepper, Mendel, & McCarthy, 1994; Luterman, 2001). ASHA standards (2007) state that “counseling individuals, families, co-workers, educators, and other persons in the community regarding acceptance, adaptation, and decision making about communication” is within a SLPs scope of practice (p. 7), yet do not set specific parameters on how to obtain such knowledge. Only 17% of graduate programs that responded to a survey by Culpepper, Mendel, and McCarthy (1994) stated that graduate

programs offered sufficient course work in counseling. Rosenberg (1997) reported that “82% of speech pathology graduate students believed they needed more counseling practicum experiences and course work in their training programs” (as cited in Luterman, 2001, p. xv).

The lack of counseling preparation in graduate school affects management of all speech-language disordered clients including PWS. Furthermore, many SLPs believe that mental health professionals do not have the background in fluency needed to understand and treat the psychological needs of those affected by a fluency disorder (Altholz & Golensky, 2004; Cooper & Cooper, 1996), which leads to speculation that SLPs are neither providing adequate counseling themselves nor referring families to mental health professionals trained in counseling.

Clinician Surveys: The 1990's

SLPs have historically reported discomfort in managing stuttering (Fraser, 1966). The most recent SLP surveys of attitudes on stuttering were completed in the late 1990's (Brisk, Healey & Hux, 1997; Cooper & Cooper, 1996; Kelly et al., 1997). The first of these studies, completed by Cooper and Cooper (1996), surveyed 1,872 SLPs from 21 states using the Clinician Attitudes Towards Stuttering (CATS) inventory. The CATS inventory investigates attitudes about a variety of fluency-related topics, including beliefs about the efficacy of stuttering therapy in general, beliefs about intervention for preschool-age CWS, and beliefs about the skills needed to effectively manage stuttering.

The survey by Brisk et al. (1997) focused only on attitudes held by SLPs working in schools. The authors surveyed 278 school-based SLPs from across 10 states regarding

their educational backgrounds in fluency disorders, perceived competence managing fluency disorders, attitudes about PWS, and plans for continuing education on stuttering. The authors were also interested in clinician opinions about the need for fluency specialists; ASHA approved the Specialty Board on Fluency in 1998.

Kelly et al. (1997) performed a survey similar to the survey completed by Brisk et al. (1997). The authors surveyed 157 SLPs working in the Indiana public schools regarding their educational experiences in fluency disorders, caseload demographics, plans for continuing education on stuttering, and perceived competence in the management of fluency disorders.

The most recent survey of speech-language pathology graduate education program requirements in fluency disorders was published by Yaruss and Quesal in 2002. The authors had completed a similar survey in 1997, after the 1993 changes in ASHA standards. The goal of the 2002 survey was to update information found in the 1997 survey in preparation for further changes in ASHA standards in 2005.

The majority of respondents to clinician surveys performed in the 1990's reported having taken one graduate level fluency course. In a survey by Kelly et al. (1997), 65% of responding clinicians reported taking only one course completely devoted to fluency as part of their master's curriculum. Additionally, 39% of responding clinicians reported taking one or more master's level courses partially devoted to fluency disorders. Nineteen percent reported not having taken any courses entirely devoted to fluency disorders.

These numbers were slightly different than those obtained in the Brisk et al. study (1997). However, the Brisk et al. study did not provide an option for clinicians to report that they had not completed any course work in fluency disorders. The Brisk et al. study reported that 79.7% of clinicians surveyed had taken 1-2 fluency courses as part of their education. The remaining clinicians reported taking more.

The information reported by Kelly et al. (1997) and Brisk et al. (1997) was in agreement with information provided by graduate programs regarding the number of required fluency courses. In 2002, 77.4% of responding speech-language pathology graduate programs reported that they required students to take one course on fluency disorders (Yaruss & Quesal). Thirty-three percent of responding programs reported offering an elective course on fluency disorders. Despite the 1993 ASHA changes that made it possible to obtain a graduate degree in speech-language pathology without taking any fluency course work, the majority of programs had not eliminated fluency courses; only 3.8% of responding programs offered neither a required nor elective course on fluency disorders. However, 57.0% of responding graduate programs reported having made changes to their fluency requirements after the 1993 revisions to ASHA standards; reductions in fluency-related clinical practicum requirements accounted for 95.6% of these changes (Yaruss & Quesal, 2002). Additionally, 19% of responding programs anticipated further reductions in either fluency-related course work or practicum after the 2005 changes in ASHA standards.

The respondents to the Kelly et al. (1997) survey reported that theory was emphasized disproportionately over clinical knowledge in their graduate courses. The

authors noted that this trend that had been reported in numerous previous studies (e.g., Mallard et al., 1988; Ryan, 1985). This information conflicted with graduate program reports that the majority of fluency course work was based on clinical application (Yaruss & Quesal, 2002). The responses to the Kelly et al. (1997) survey also conflicted with the majority of responses to the Brisk et al. (1997) survey. Respondents to the survey by Brisk et al. (1997) stated that fluency disorder courses offered as part of their higher education course work had adequately prepared them to evaluate CWS of all ages and to treat most CWS, with the exception of preschool-age CWS.

Before the 1993 changes in ASHA standards, graduate students in speech-language pathology were required to obtain clinical experience managing fluency disorders. After 1993, it became possible for students to graduate without accumulating any clinical experience managing fluency disorders, and indeed, this is what happened for a majority of clinicians responding to the Kelly et al. (1997) survey. The authors reported that 51% of respondents reported obtaining no experience in evaluating stuttering, and 52% reported obtaining no experience in treating stuttering as part of their graduate clinical practicum. Similarly, 65.1% of graduate programs that responded to the Yaruss and Quesal survey (2002) reported that it was possible for students to graduate from their program without completing any clinical work in fluency disorders.

However, the findings by Brisk et al. (1997) suggest that opportunities for experience managing fluency disorders improved during the CFY. They found that 90.2% of clinicians had treated fluency disordered clients as part of their combined graduate and CF training (Brisk et al., 1997).

Though many clinicians reported feeling uncomfortable managing stuttering, Brisk et al. (1997) found that school-based clinicians do not seek out continuing education courses. Though 62% of clinicians stated that they had taken continuing education courses in fluency disorders since obtaining their highest degree, only 15% had taken these courses within the past 1-2 years (Brisk et al., 1997). Additionally, only 31% reported that they would definitely take continuing education in fluency topics in the next year. Twenty-eight percent reported that they would not take continuing education in fluency topics in the following year and 41% were undecided. The study by Kelly et al. (1997) produced similar findings: Though 96% of clinicians reported taking continuing education on stuttering topics, 63% had done so less than once per year. The authors speculated that a lack of continuing education opportunities were responsible for this trend. A majority of respondents complained that “continuing education opportunities in stuttering are insufficient” (Kelly et al., 1997, p. 202), stating that state and local workshops on stuttering were few and often scheduled in conflict with workshops for higher-incidence disorders.

Kelly et al. (1997) asked clinicians to rate their perceived confidence treating PWS after completion of their master’s degree, after completion of their CFY, and at the time the survey was completed. The majority of clinicians rated themselves as having average confidence at all time junctures, though the mean rank increased slightly with each level of experience. Notably, though clinicians reported only average clinical competence in treating stuttering, clinicians only perceived themselves as more clinically competent in the treatment of articulation/phonological disorders and language disorders.

Of those that felt inadequate managing stuttering, many stated that “they needed more information about, and experience with, techniques for managing stuttering” (p. 204); the authors noted this sentiment had been expressed by clinicians surveyed in a number of previous investigations (e.g., Sommers & Caruso, 1995; St. Louis & Durrenberger, 1993).

Most respondents to the Brisk et al. (1997) study felt confident treating CWS of all ages. Clinicians were most confident treating school-age CWS (64%), followed by preschool-age CWS (58%), and adolescent CWS (54%). Similarly, clinicians responding to the Kelly et al. (1997) study reported average skill level working with CWS of all ages.

Forty-eight percent of respondents to the Cooper and Cooper (1996) survey agreed that adequate therapeutic techniques exist for managing stuttering. In the Brisk et al. (1997) study, most clinicians reported using a wide variety of treatment techniques (84%). The findings by Kelly et al. (1997) were similar: 64% of clinicians surveyed reported using a “variety/eclectic” approach to treatment (p. 200). Popular treatment approaches included stuttering modification (52%) and fluency shaping (50%). Notably, in the 1996 Cooper and Cooper study, the number of respondents that felt operant conditioning was a useful treatment strategy for stuttering decreased significantly from the time the survey was first administered in 1983.

Clinicians treated CWS in a variety of settings. The clinicians surveyed by Brisk et al. (1997) reported that most CWS were treated individually (67%), followed by in groups with children who have other types of speech-language disorders (38%), followed by in groups with other CWS (36%), followed by in the classroom (31%). Again, Kelly

et al. (1997) reported similar findings: 41% of CWS were treated individually, followed by 48% in groups, and 11% in the classroom. Though the speech-language disorders of the other children participating in groups were not specified in the Kelly et al. study, the authors noted that clinicians commented that they often were forced to group CWS with CWNS “due to scheduling difficulties and excessive caseload sizes” (p. 199).

Most clinicians responded that counseling skills were important when managing CWS. Eighty-seven percent of respondents to the Cooper and Cooper (1996) study reported that SLPs managing stuttering need to be adept at counseling techniques, and ninety-four percent of respondents reported that parent counseling was critical when working with preschool-age CWS. For school-age CWS, 81% of respondents did not feel that the school counselor was responsible for providing counseling services to CWS. Additionally, a majority of respondents stated that school counselors were unaware of the psychological trauma experienced by many CWS.

Presumably respondents to the Cooper and Cooper (1996) study felt that providing counseling to CWS was within the scope of practice of the school SLP. However, though 80% of clinicians reported counseling parents as part of their treatment plan for CWS, only 66% reported feeling comfortable doing so (Brisk et al., 1997). This reinforced Healey’s observation that, in retrospect, many SLPs wished that their graduate curriculum had offered more education in counseling techniques (as cited in Kelly et al., 1997, p. 204).

Problem Summary

In summary, stuttering is a complicated disorder. The exact causes of stuttering remain unknown. Determining the most effective ways to treat stuttering is difficult. Even experts in the field occasionally disagree on what constitutes an effective treatment. The foundation for making informed decisions about stuttering treatment lies in education and clinical experience. Yet surveys performed in the 1990's suggest that the 1993 changes to ASHA standards have resulted in a decrease in graduate fluency education.

The surveys performed by Brisk, Healey, and Hux (1997), Cooper and Cooper (1996), and Kelly et al. (1997) are currently over a decade old. Since the studies were performed, ASHA has again implemented changes in standards for obtaining the CCC-SLP (American Speech-Language Hearing Association, 2005a), and the scope of practice for SLPs (American Speech-Language Hearing Association, 2007). In addition, a Specialty Board on Fluency Disorders was established to recognize fluency specialists in 1998 (Specialty Board on Fluency Disorders, n.d.). Knowledge of whether these changes have affected SLP attitudes regarding the management of stuttering is important.

The purpose of this study is to examine how attitudes of SLPs today compare with the attitudes of SLPs surveyed in the 1990's. Specifically, do school-based clinicians feel more or less satisfied with the fluency education and training they received in their graduate program than clinicians surveyed in the 1990's? Do school-based clinicians feel more or less confident managing CWS than clinicians surveyed in the 1990's? When treating CWS, what types of treatment programs do school-based clinicians use?

Additionally, ASHA (2005b) maintains a position that SLPs should “incorporate the principles of evidence-based practice in clinical decision making” (p. 1). The current study also aims to examine if school-based SLPs are complying with ASHA’s position on evidence-based practice by using fluency treatments that have been supported by research.

CHAPTER III

Methodology

Participants

Five hundred SLPs were asked to participate via an electronic mail invitation. Potential respondents were listed in the 2008 ASHA membership directory as school-based SLPs working in California. Initial invitations were e-mailed on April 7, 2008. Of the initial 500 invitations, 16 were undeliverable and 7 invitees responded that they no longer worked in the public school system. On April 9, 2008, invitations were e-mailed to an additional 23 potential respondents. Two follow-up reminders were e-mailed to all invitees who had not completed the survey; the first on April 28, 2007 and the second on May 12, 2008.

Procedure

The survey was accessible electronically through a web link in the e-mail invitation. The survey was hosted by SurveyMonkey, a web-based engine for survey administration. The survey featured Secure Sockets Layer (SSL) data encryption for added security of information transmitted via the internet.

Because the survey was administered electronically, respondents were asked to type their initials on the informed consent form in lieu of a signature. Aside from the subject's initials, there was no personal identification information on the surveys themselves.

Questionnaire Development

Previous Surveys

A 28-question survey was compiled. In order to place results in the context of previous surveys, questions in the current survey were adapted from the surveys developed by Brisk et al. (1997), Cooper and Cooper (1996), and Kelly et al. (1997). A copy of the current survey may be found in the appendix.

Methodology of the surveys administered by Brisk et al. (2007), Cooper and Cooper (1996), and Kelly et al. (1997) differed in two ways: (a) characteristics of respondents, and (b) types of questions posed. For example, Cooper and Cooper (1996) surveyed SLPs working in a variety of settings, whereas Brisk et al. (1997) and Kelly et al. (1997) surveyed only SLPs working in public schools. Another difference in respondent characteristics was in the geographic regions included in each survey: Cooper and Cooper (1996) surveyed SLPs from 21 different states, Brisk et al. (1997) surveyed SLPs in ten different states, and the survey by Kelly et al. (1997) was sent only to SLPs in Indiana.

Questions addressed in previous surveys varied. The Cooper and Cooper (1996) survey addressed questions in eight different domains: (a) clinician beliefs regarding the etiology of stuttering, (b) attitudes on early intervention, (c) attitudes regarding the efficacy of stuttering therapy, (d) attitudes about the personalities of PWS, (e) attitudes about skills needed in order to effectively manage stuttering, (f) attitudes regarding teachers, counselors, and reactions to stuttering, (g) beliefs about various therapy techniques, and (h) attitudes about the parents of PWS.

The topics addressed in the survey by Brisk et al. (1997) included: (a) background information of respondents, (b) attitudes about clinical management of stuttering, and (c) continuing education and future needs. The Brisk et al. (1997) study was completed at the time that ASHA was considering the establishment of fluency specialists, and included seven questions regarding the perceived need for fluency specialists.

The Kelly et al. (1997) survey addressed questions in eight different areas: (a) background information of respondents, (b) educational background of respondents, (c) continuing education, (c) clinical training, (d) caseload information, (e) information about how respondents identified and diagnosed stuttering, (f) treatment techniques, and (g) perceived competency in managing stuttering.

Questions in the current survey were divided into three categories: (a) background information, (b) opinions on the efficacy of stuttering treatment, and (c) caseload information.

Background Information

Information addressed in the background information section included: (a) respondent demographics, (b) objective and subjective information about the respondent's graduate school preparation in fluency disorders, and (c) the respondent's fluency-related continuing education experiences.

Demographics.

Demographic information was limited to the year of graduation from graduate school, year first licensed to work in the California public school system, possession of a CCC-SLP, and recognition by the Specialty Board on Fluency Disorders. Kelly et al.

(1997) obtained similar information in their survey. In addition, respondents were asked to provide the year they obtained a graduate degree in speech-language pathology in order to identify any different response trends between respondents who graduated before and after the 1993 changes in ASHA standards.

Respondents were also asked if they held a CCC-SLP. A CCC-SLP is not required to practice in California public schools. Respondents who hold a CCC-SLP potentially have more experience and training than respondents who held only a state license. Respondents were also asked if they were recognized as fluency specialists by the Specialty Board on Fluency Disorders.

Educational preparation.

A few questions were asked about fluency course work taken in graduate school. Respondents were asked to provide the number of courses both completely and partially devoted to fluency disorders that they were *required* to complete as part of their graduate program. The questions were adapted from the survey used by Kelly et al. (1997). Kelly et al. (1997) asked the number of entire and partial courses taken at both the bachelor's and master's level. The current survey targeted only SLPs who had obtained a graduate degree, so the question regarding courses at the bachelor's level was omitted. Though the questions in the Kelly et al. (1997) survey were presented in an open-ended format, the questions were presented in a multiple choice format in the current survey in order to streamline the data analysis. Possible answers ranged from zero courses to three or more courses.

In addition, respondents were asked to provide the number of *elective* courses both completely and partially devoted to fluency disorders that they took as part of their graduate program. This question was not included in any previous survey, but was added to the current survey based on the finding by Yaruss and Quesal (2002). Yaruss and Quesal (2002) reported that 33% of responding graduate programs offered an elective fluency course. This question was identical in format to the question regarding required courses.

Respondents were asked about topics covered in their fluency courses. Respondents were asked to state if theory, evaluation, and/or treatment were addressed in their courses. A similar question was asked in the survey by Kelly et al. (1997). The question on the Kelly et al. (1997) survey asked the respondent to state which topic was emphasized most in the respondents' graduate courses: theory, diagnosis, or therapy. The respondents also had the option to check if all three were emphasized. The question in the current survey differed in that it was presented in a checklist format that gave the respondent the option to check all that applied. In this way, the respondent was able to indicate if two of the three topics were covered. This was not an option in the Kelly et al. (1997) survey.

Respondents were asked if they felt the fluency course work offered by their graduate program adequately prepared them to manage CWS. This question was adapted from two questions asked in the Brisk et al. (1997) survey. In the Brisk et al. (1997) survey, respondents were asked if they felt the fluency courses in their graduate program prepared them to *evaluate* CWS of different ages. They were then asked if they felt the

fluency courses in their graduate program prepared them to *treat* CWS of different ages. The questions were asked in a rating scale format. In the current survey, both questions were combined into one. The age groups were eliminated; in other words, respondents were asked about their preparation to evaluate and treat CWS in general. In addition, it was deemed that a true or false format was sufficient for this question because a similar question that utilized a rating scale format was presented later in the survey.

Respondents were asked how prepared they felt to manage CWS after completion of their graduate degree and after completion of their CFY. These questions were adapted from the survey by Kelly et al. (1997). As in the survey by Kelly et al. (1997), the questions were presented in a five interval rating scale format. The verbiage in the current survey was slightly different; Kelly et al. (1997) asked respondents to rate their knowledge/skill level for working with PWS of all ages, whereas the current survey focused on preparation to work only with CWS.

Clinical preparation.

Respondents were asked if they completed clinical practicum in fluency as part of their program. This question was similar to a question asked by Brisk et al. (1997) and, as in the Brisk et al. (1997) survey, was presented in a true or false format.

Respondents that stated they had completed clinical practicum in graduate school were asked to provide the number of hours they completed and the ages of clients they managed. Ages were divided into four groups: (a) preschool age (0-4 years), (b) elementary school age (5-12 years), (c) adolescents (13-18 years), and (d) adults (18 years and older). These questions were adapted from the study by Kelly et al. (1997). As

in the study by Kelly et al. (1997), the questions were presented in an open-ended format. The age ranges provided in the current study differed. Kelly et al. (1997) included three age ranges: preschool, school-age, and adults.

Respondents were asked if they received training in counseling techniques during graduate school or their clinical fellowship year. This question was presented in a true or false format. Previous surveys did not ask clinicians about their personal educational or training background in counseling techniques. However, the surveys by Brisk et al. (1997) and Cooper and Cooper (1996) included questions regarding attitudes about counseling PWS.

Continuing education.

Respondents were asked if they had taken any continuing education courses on fluency in the past five years. This question was presented in a true or false format. A similar question was posed in the surveys by Brisk et al. (1997) and Kelly et al. (1997). Both studies asked if any continuing education in fluency disorders had ever been obtained.

Respondents in the current study were also asked if they planned to take any continuing education courses on fluency in the future. A similar question was posed in the surveys by Brisk et al. (1997), who asked if respondents planned to take any fluency-related continuing education courses in the following year. The question in the Brisk et al. (1997) survey was asked in a rating scale format, but a true or false format was deemed sufficient for the current survey.

Perceived Efficacy of Stuttering Treatment

Information addressed in the efficacy of stuttering treatment section of the survey included: (a) opinions about stuttering treatment efficacy for different age groups, (b) opinions on whether or not counseling skills are necessary when managing CWS, and (c) opinions about the respondent's perceived competence level in managing CWS.

Respondents were asked if they believed adequate treatment techniques for stuttering existed for four different age groups. This question was presented in a true or false format. Respondents were then asked how successful they felt treatment was for each age group. The latter question was adapted from the survey by Cooper and Cooper (1996). However, Cooper and Cooper (1996) asked the about the success of treatment for PWS in general rather than separating PWS into different age groups. Similar to the Cooper and Cooper (1996) survey, the question in the current survey was presented in a five interval rating scale format. Possible answers ranged from completely unsuccessful to completely successful.

Respondents were asked if they felt that competence in counseling is necessary when working with CWS. The question was presented in a true or false format. This question was adapted from a similar question asked by Cooper and Cooper (1996). The question on the Cooper and Cooper (1996) survey was directed at counseling PWS of all ages, whereas the question on the current survey targeted counseling only CWS. In both the Cooper and Cooper (1996) survey and the current survey, the question was presented in a five interval rating scale format.

Respondents were asked if they felt that they personally had adequate skills to manage CWS. This question was adapted from the survey by Kelly et al. (1997). As in the Kelly et al. (1997) survey, the question was presented in a true or false format. If respondents indicated that they felt less than adequate, they were provided with a space in which to write what skills would help them successfully manage CWS. Kelly et al. (1997) also asked respondents to indicate upon which skills they could improve. However, the current study used an open-ended format for this question whereas Kelly et al. (1997) provided five options from which to choose.

Caseload Management

Information addressed in the caseload section of the survey included: (a) caseload demographics, (b) treatment techniques used to manage CWS, and (c) follow-up preferences. Respondents were asked to state their total student caseload, the number of CWS on their caseload, and the number of CWS on their caseload within three specific age ranges. Similar information was also obtained in the survey by Kelly et al. (1997).

Treatment approaches.

Respondents were asked to name the types of treatment approaches they employed when managing CWS. The question was presented in a checklist format. Respondents were able to indicate if they employed more than one type of treatment technique. Treatment approaches were categorized into four groups, adapted from Guitar (2006). The approaches were: (a) fluency shaping approach (e.g., operant conditioning; techniques whose goal is extinction of all observable stuttering behaviors), (b) stuttering modification approach (e.g., facilitating reduction in avoidance behaviors and secondary

characteristics; treatment as described by Van Riper; providing counseling such as cognitive-behavioral therapy), (c) procedures to increase overall communication abilities (e.g., providing opportunities to practice communicating in groups; giving positive feedback for fluent speech), and (d) environmental modifications (e.g., modification of parent-child interactions). This question was adapted from similar questions asked by Brisk et al. (1997) and Kelly et al. (1997).

Both the surveys by Brisk et al. (1997) and Kelly et al. (1997) survey asked respondents questions about the types of stuttering treatments they utilized. The Brisk et al. (1997) survey asked respondents to state if they used a variety of treatment approaches, using a five interval rating scale. The Kelly et al. (1997) survey provided respondents a checklist in which to indicate if they used fluency-shaping techniques, stuttering modification techniques, eclectic treatment techniques, and/or other types of techniques. Guitar's treatment classification system was utilized in the development of the question in the current survey because it provided respondents more treatment options from which to choose. In addition, respondents to the current survey were provided with a space in which to write in the names of any commercially available stuttering treatments they utilized.

Treatment settings.

Respondents were asked to state the settings in which they treat CWS. For example, did they provide one-on-one or group therapy to the CWS on their caseload? The question was presented in a checklist format. A similar question was asked in the study by Brisk et al. (1997). The question on the current survey differed from the

question on the Brisk et al. (1997) survey because it did not ask respondents to identify whether CWS were seen in groups with other CWS or in groups with children diagnosed with other types of speech-language disorders.

Follow-up approaches.

Respondents were asked about any follow-up management they provided upon discharging a CWS from their caseload. The question was an expansion of a question asked by Kelly et al. (1997); Kelly et al. (1997) asked if respondents typically saw CWS once they had been dismissed from therapy. On the current survey, respondents were asked to state if they had ever followed-up with the child personally, or with the child's parents and/or teachers. Other response options provided were "none of the above" and "I have never dismissed a CWS from therapy". The question was presented in a checklist format.

CHAPTER IV

Results

Background Information

One hundred respondents completed the survey either completely or partially.

This amounts to a 20% return rate.

Demographics

The year in which respondents had first obtained a graduate degree in speech-language pathology ranged in date from 1963 - 2005. For purposes of comparison, respondents were grouped into two date-of-degree categories: respondents who graduated between 1963 - 1993 (57%; 57/100); and respondents who graduated between 1994 - 2005 (43%; n = 43/100). These groups were used to make comparisons between responses given by those who graduated before and those who graduated after the 1993 changes to ASHA standards.

Ninety-nine percent of respondents held a credential to teach in the California public school system (n = 99/100). One respondent reported that he or she was hired on a credential waiver by the school district by which he or she was employed. Ninety-nine percent of respondents held the CCC-SLP in speech-language pathology (CCC-SLP) (n = 99/100). Nine percent (n = 9/99) of respondents reported being Board Recognized Fluency Specialists. Ninety respondents reported actively working with children in public schools. Two respondents had retired and one was currently working only with adults.

Educational Preparation

Figure 4-1 illustrates the number of required fluency courses taken by respondents as part of their graduate program. Ninety-eight percent of respondents were required to complete at least one graduate level course completely devoted to fluency disorders (n = 91/93). On average, most respondents had taken one course completely devoted to fluency disorders and one course partially devoted to fluency disorders. Only two respondents reported taking no required courses devoted to fluency disorders in their graduate program. One of these respondents graduated after the 1993 changes in standards.

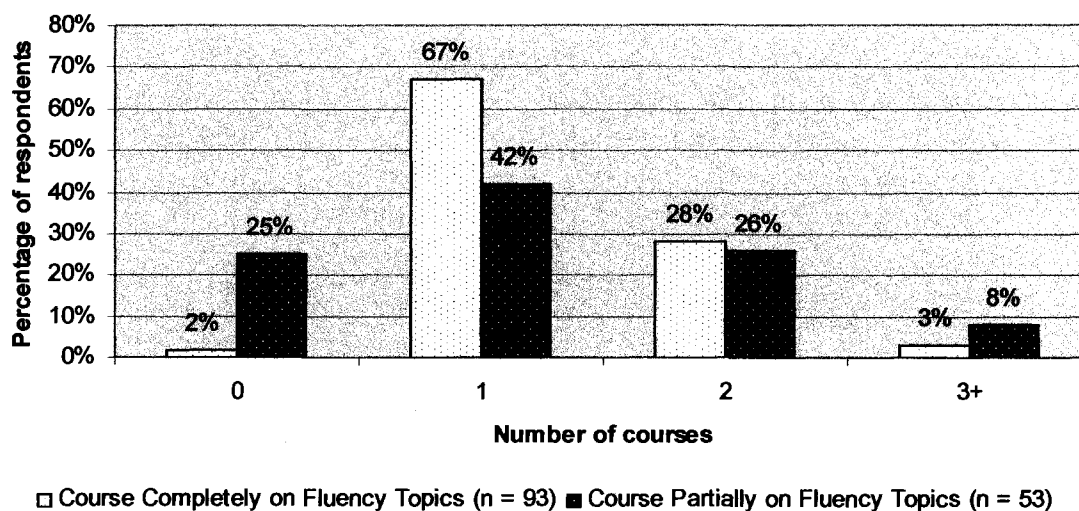


Figure 4-1

Percent of Respondents Who Took Graduate Level Fluency Courses

Figure 4-2 illustrates the comparison between the number of required fluency courses taken by respondents who graduated both before and after the 1993 changes in ASHA standards. The average number of fluency courses taken was similar for respondents who graduated both before and after the 1993 ASHA standards were implemented. On average, those who graduated both before and after 1993 took an elective course neither completely nor partially devoted to fluency.

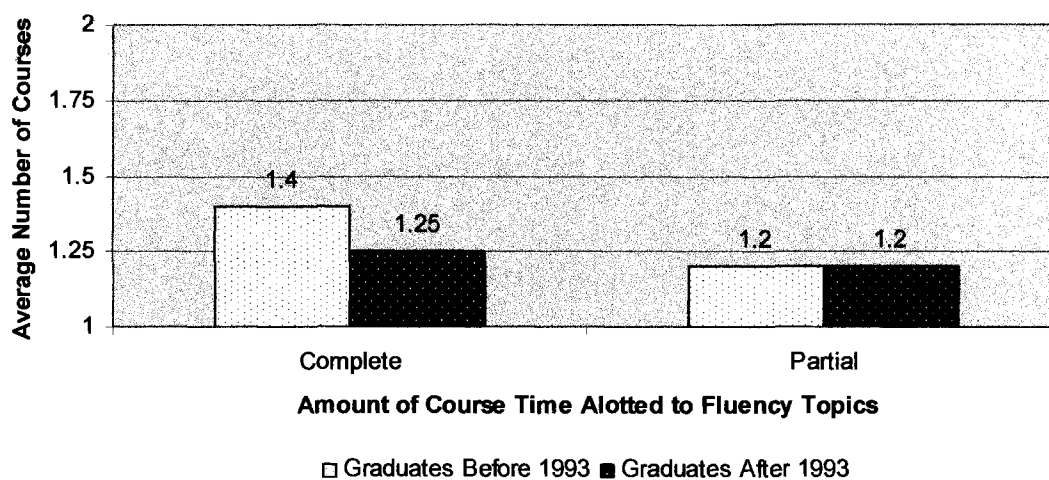


Figure 4-2

Comparison of Average Number of Fluency Courses Taken by Respondents Who Graduated Before and After 1993

When asked which topics were included in their graduate fluency courses, all respondents reported that theory was presented (100%; n = 97/97). Most also reported that information on evaluation (98%; n = 95/97) and treatment (96%; n = 93/97) was presented.

Table 4-1 compares the percentage of respondents who reported feeling adequately prepared to evaluate and treat CWS upon completion of their graduate fluency course work. Less than half the respondents reported feeling that their graduate fluency courses adequately prepared them to diagnose and treat CWS. This was true for respondents who graduated both before and after the 1993 ASHA standards were implemented. Note that the total number of responses is more than the combined number of graduates before and after 1993 because a few respondents did not indicate the year in which they obtained a graduate degree.

Table 4-1

Comparison of Percent of Respondents Reporting Preparedness to Manage CWS upon Completion of Graduate Course Work

Date of Graduation	Percentage of Respondents
Graduated Before 1993	48% (n = 26/54)
Graduated After 1993	48% (n = 19/40)
Total	46% (n = 45/97)

Clinical Preparation

Table 4-2 illustrates the number of respondents who obtained clinical hours with fluency clients during their graduate program. Notably, the number of respondents who completed clinical hours in fluency during graduate school decreased after the 1993 change in ASHA's requirements.

Fifty-five percent of respondents could not recall the number of clinical hours obtained in graduate school with clients who stuttered ($n = 38/69$). Respondents who recalled or estimated their number of hours reported an average of 23 hours of clinical experience (range 3 -50 hours; $n = 26$). They reported an average of 6 hours of assessment (range 0 -25 hours; $n = 20$), and an average of 18 hours of treatment (range 3 - 36 hours; $n = 26$). Ten additional responses were not included due to discrepancies in data.

Table 4-2

Comparison of Respondents Who Graduated before and after 1993 Reporting Clinical Practicum with Fluency Clients

Date of Graduation	Percentage of Respondents
Graduated Before 1993	91% ($n = 52/57$)
Graduated After 1993	68% ($n = 27/40$)
Total	79% ($n = 100$)

The range of clinical hours obtained in graduate school with PWS of various age groups is illustrated in table 4-3. Among different age groups of PWS, the highest percentage of respondents reported obtaining clinical practicum with adult clients. Respondents also reported obtaining more hours on average with adult clients.

Table 4-3

Percentage of Respondents Reporting Clinical Practicum with Fluency Clients from Different Age Groups, and Hours Obtained by Age Group

Age Group	Percentage of Respondents who Obtained Practicum Hours	Range of Hours Obtained	Mean Number of Hours Obtained
Preschool	23% (n = 8/35)	5 - 25	11
Elementary-school	51% (n = 19/37)	5 - 25	14
Adolescents	32% (n = 12/38)	8 - 25	14
Adults	68% (n = 26/38)	2 - 43.5	16

Figure 4-3 illustrates respondents' perceived level of preparation to manage CWS upon completion of their graduate program requirements and upon completion of their CFY. When asked how prepared they felt to work with CWS upon completion of their graduate degree, respondents most commonly responded feeling somewhat prepared. This was true for respondents who graduated both before and after the 1993 ASHA standards were implemented. Overall, more respondents felt prepared to work with CWS

(81%; n = 80/99) than unprepared after graduate school. Additionally, the number of respondents that felt prepared to work with CWS increased slightly after the completion of their Clinical Fellowship year (85%; n = 82/97).

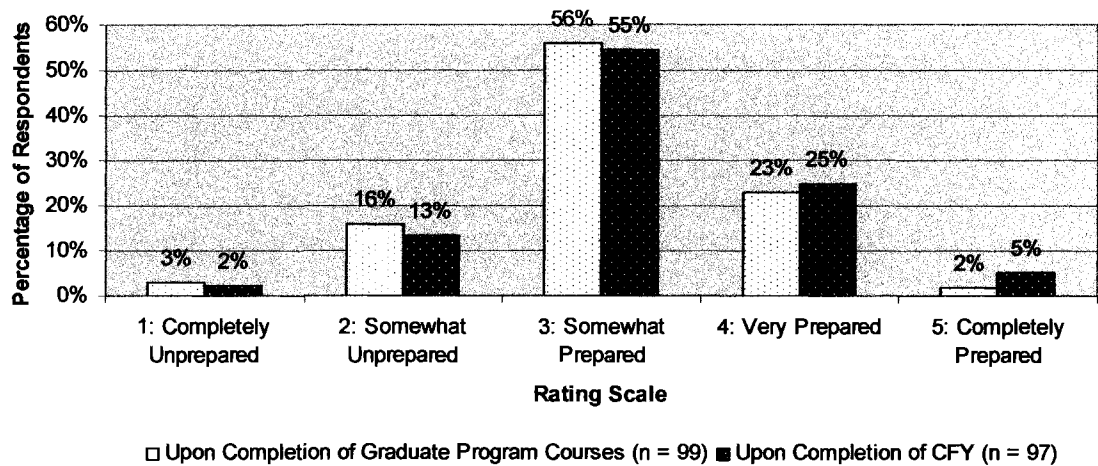


Figure 4-3

Comparison of Perceived Preparation Level upon Completion of Graduate Program and Completion of CFY

Continuing Education

A majority of respondents reported having taken continuing education courses on fluency in the past five years (59%; n = 58/98). For those that had taken courses in the past five years, the average number of course hours completed was 9 (range 3 - 24 hours;

n = 51). Sixty-eight percent (n = 67/98) of respondents stated that they planned to take continuing education courses on fluency in the future.

Perceived Efficacy of Stuttering Treatment

The majority of respondents felt that adequate treatment approaches existed for all age groups; 83% (n = 76/92) felt that adequate techniques were available for preschoolers, 86% (n = 81/94) felt there were adequate techniques for elementary school age children, 79% (n = 71/90) felt that adequate techniques existed for adolescents, and 71% (n = 58/82) felt there were adequate techniques for adults.

Table 4-4

Perceived Success of Stuttering Treatment for Different Age Groups

Rating	Preschool age CWS (0- 4 years)	Elementary school age CWS (5- 12 years)	Adolescents who stutter (13- 18 years)	Adults who stutter (18 and older)
1: Completely unsuccessful	3.3% (n = 3)	0%	0%	3.8% (n = 3)
2: Somewhat unsuccessful	6.6% (n = 6)	7.5% (n = 7)	17.4% (n = 15)	27.8% (n = 22)
3: Somewhat successful	39.6% (n = 36)	51.6% (n = 48)	52.3% (n = 45)	31.6% (n = 25)
4: Very successful	47.3% (n = 43)	39.8% (n = 37)	27.9% (n = 24)	34.2% (n = 27)
5: Completely successful	3.3% (n = 3)	1.1% (n = 1)	2.3% (n = 2)	2.5% (n = 2)

Table 4-4 illustrates the perceived success of stuttering treatments for clients of different ages. The majority of respondents felt that stuttering treatment was either somewhat or very successful for CWS of all ages; 87% responded this way for the preschool population (n = 79/91), 91% for elementary-school age children (n = 85/93), and 80% for adolescents (n = 69/86), although responses regarding the efficacy of treatment for adults were mixed.

Table 4-5 illustrates respondents' current perceived level of competence in managing CWS. Sixty-two percent of respondents reported possessing adequate skills for working with CWS (n = 60/97). As a group, more respondents who graduated before 1993 felt adequately prepared to manage CWS than respondents who graduated after 1993. Note that the total number of responses is more than the combined number of graduates before and after 1993 because a few respondents did not indicate the year in which they obtained a graduate degree.

Table 4-5

Comparison of Respondents Who Graduated before and after 1993 Reporting Perceived Competence in Managing CWS

Date of Graduation	Percentage of Respondents
Graduated Before 1993	67% (n = 37/55)
Graduated After 1993	59% (n = 23/39)
Total	62% (n = 60/97)

Respondents who stated that they did not possess adequate skills were asked to identify specific skills upon which they needed to improve. As shown in figure 4- 4, responses to this question fell into seven categories. The need for continuing education was most commonly cited. Other skills cited were the need for more experience managing CWS, the need for expert mentorship, the discovery of better treatment techniques, better understanding of counseling techniques, better ways of handling issues of client motivation, and increased parent and/or teacher involvement.

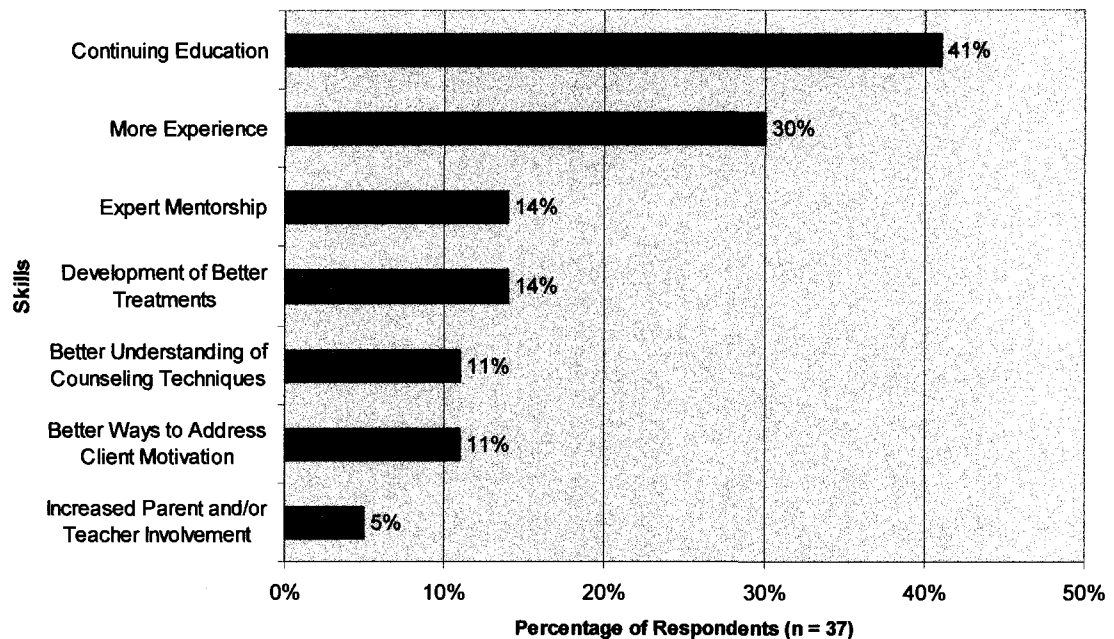


Figure 4-4

Skills Respondents Reported Would Improve Ability to Manage CWS

Caseload Management

Table 4-6 illustrates respondents' caseload demographics. The respondents' average caseload was 46 children. The average number of CWS on a caseload was 2. The average percentage of CWS on a caseload was 5%.

Table 4-6

Comparison of Total Caseload to CWS on Caseload: Range and Mean

<u>Total Caseload (n = 88)</u>		<u>CWS on Caseload (n = 90)</u>		<u>Average Percentage of CWS on Caseload (n = 88)</u>	
Range	Mean	Range	Mean	Range	Mean
5 – 90	46	0 - 10	2	0% – 16%	5%

Treatment Approaches

As shown in figure 4-5, most respondents combined a variety of treatment approaches when working with CWS. Stuttering modification, environmental modifications, and procedures to increase overall communicative abilities were used by over 70% of the respondents. Fluency-shaping techniques were reported used by the least number of respondents.

Respondents reported using a variety of commercially available treatment resources. These resources were based in a variety of treatment philosophies. Though respondents reported using fluency-shaping techniques least, most of the specific

resources named were based on the fluency shaping approach, including materials written by David Daly (used by 24% of respondents; $n = 8/34$), Delayed Auditory Feedback devices (used by 6% of respondents; $n = 2/34$), some of the materials published by the Stuttering Foundation of America, (used by 9% of respondents; $n = 3/34$) and SuperDuper's *Snooky Snail* and *Turtle Talk* materials (used by 6% of respondents; $n = 2/34$). In addition, Linguisystem's *Easy Does It* fluency Cards (9%; $n = 3/34$), and Ryan's Monterey Fluency program (6%; $n = 2/34$) are partially based on a fluency shaping approach. *Easy Does It* also makes use of environmental modification techniques, and the Monterey Fluency program makes use of operant-conditioning techniques. Notably, only one respondent reported using the Lidcombe program.

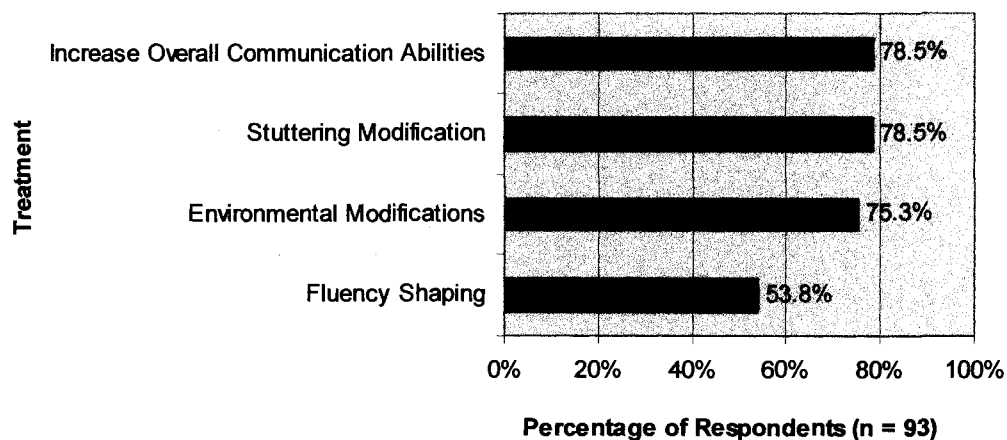


Figure 4-5

Respondents' Reported Treatment Techniques

Treatment Settings

Figure 4-6 illustrates the settings in which respondents treat CWS. Seventy-nine percent of respondents treated CWS using a combination of group and individual therapy. Other treatment settings were used less frequently; Classroom based intervention, only individual sessions, and only group sessions were used by less than 30% of respondents.

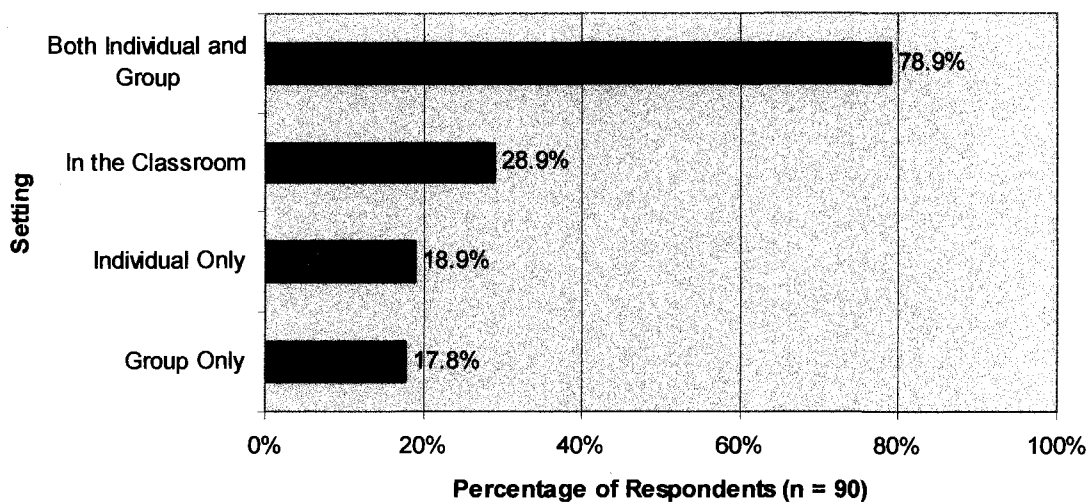


Figure 4-6

Respondents' Reported Treatment Settings

Follow-up Approaches

Figure 4-7 illustrates the type of follow-up practices respondents employed with CWS. Upon dismissal of a CWS from therapy, the most common follow-up practices

reported were through communication with parents or teachers. Seven respondents reported that they had never dismissed a CWS from therapy.

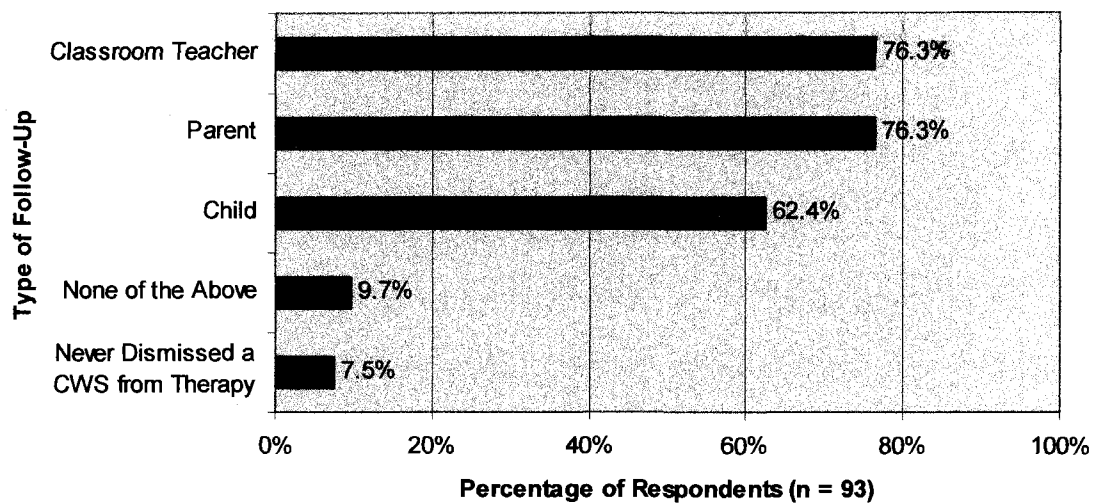


Figure 4-7

Respondents' Reported Follow-up Practices

CHAPTER V

Discussion and Summary

Overview

The purpose of this survey was to compare SLPs working in the California public schools to SLPs who responded to similar surveys performed in the 1990's in regards to levels of education, training, and perceived competence in managing CWS. The specific research questions addressed were (a) Do school-based clinicians receive adequate education and training from their graduate program to work with CWS? (b) Do school-based clinicians feel more or less confident managing CWS than clinicians did in the 1990's? (c) When treating CWS, what types of treatment programs do school-based clinicians use, and (d) are the treatments implemented by school-based clinicians evidence-based?

Education and Training

Beginning in 1993, ASHA no longer required graduate students in speech-language pathology to take course work or clinical practicum in fluency in order to obtain a CCC-SLP. The authors of surveys performed in the 1990's expressed concern that the number of speech-language pathologists graduating without taking any course work in fluency would increase after the 1993 ASHA changes. However, results of the current survey indicate that graduates after 1993 take the same number of fluency courses as those who graduated before 1993. Respondents to the current survey who graduated both before and after 1993 reported being required to take on average one full and one partial course on fluency disorders. The average number of required graduate courses in fluency

reported by respondents to the current survey was consistent with the average number of graduate courses taken by respondents to the Kelly et al. (1997) survey. The findings were also in agreement with the study by Yaruss and Quesal (2002), who found that only four percent of graduate programs that responded to their survey had eliminated required fluency course work after 1993. Thus, the ASHA standard changes did not result in a decrease in graduate fluency course work for respondents to the current survey.

Respondents to the current survey reported that theory, evaluation, and treatment were emphasized equally in their graduate fluency courses; one hundred percent of respondents to the current survey reported coverage of theory in their course work, ninety-eight percent reported coverage of evaluation, and ninety-six percent reported coverage of treatment strategies. This differed from Kelly et al.'s (1997) assertion that emphasis on theory was disproportionate in graduate fluency classes.

The results of the current survey indicate a decrease in fluency-related clinical practicum opportunities after the 1993 changes in ASHA standards. This result was consistent with the Yaruss and Quesal (2002) study, which reported that a large number of graduate programs had reduced clinical practicum requirements in fluency after 1993. Sixty-five percent of programs responding to the Yaruss and Quesal (2002) survey stated that students could graduate without obtaining any clinical experience managing PWS. In the current survey, the percentage of respondents who completed clinical practicum in fluency fell from 91% for those that graduated before 1993, to 68% for those that graduated after 1993. This result suggests that a number of clinicians are not receiving

any clinical experience working with PWS as part of their graduate program, much less adequate experience.

The results of the current survey suggest that respondents are more interested in continuing fluency education opportunities than respondents to the Kelly et al. (1997) survey. A similar percentage of respondents to both the Kelly et al. (1997) survey and the current survey reported taking continuing fluency education courses in the past. However, relatively few respondents to the Kelly et al. (1997) survey (31%) reported that they would seek out additional continuing education courses in fluency in the future. This differed from data collected in the current survey, where 68% of respondents reported that they would take continuing education courses in fluency in the future.

Perceived Competence

Despite the decrease in fluency-related clinical practicum experience, respondents to the current survey perceived themselves as somewhat prepared to treat CWS both after completion of their graduate degree and after the completion of their CFY. Respondents to the Kelly et al. (1997) survey, most of who graduated before 1993, reported similar perceived levels of preparation. Evidently, the 1993 changes in ASHA standards do not seem to have affected SLPs overall perceived competence level in managing CWS.

In addition, the majority of respondents to the current survey reported that they *currently* perceived themselves as competent at managing CWS. However, the percentage of respondents reporting competence in the current survey was notably lower than the percentage of respondents reporting competence in the Kelly et al. (1997) survey. Eighty-nine percent of respondents to the Kelly et al. (1997) survey perceived

themselves as competent managing CWS at the time they responded to the survey, compared with sixty-two percent in the current survey.

The lower levels of competence reported in the current survey are partially due to the responses of those who graduated after 1993. In the current survey, perceived competence fell from 67% for those who graduated before 1993 to 59% for those that graduated after 1993. Graduates after the 1993 changes in ASHA standards had fewer years of experience in the field and potentially had fewer fluency-related clinical practicum experiences than respondents who graduated before 1993. However, even respondents to the current survey who graduated before 1993 perceived themselves on average as less competent managing CWS than respondents to the Kelly et al. (1997) study. The reason for this difference in responses is unknown.

Compared to respondents to Cooper and Cooper's (1996) study, respondents to the current survey held better opinions regarding the adequacy of current treatment techniques for PWS. Over 70% of respondents to the current survey reported that adequate treatments were available for PWS of all ages, whereas less than half the respondents to the Cooper and Cooper (1996) survey felt that adequate treatments existed for PWS. The reason for this change is unknown.

Respondents to the current survey identified a number of opportunities and skills that would help them improve their stuttering management skills. The two most frequently identified opportunities and skills were continuing education in fluency disorders and more experience working with PWS. These opportunities were also most frequently identified by respondents to the Kelly et al. (1997) survey: "Of the nearly half

who felt inadequate [at managing PWS], the majority stated that they needed more information about, and experience with, techniques for managing stuttering” (p. 204).

Respondents to the current survey most frequently identified continuing fluency education as the opportunity that would help increase their abilities to manage CWS effectively. As noted above, 68% percent of respondents to the current survey stated that they planned to take continuing education courses in fluency in the future.

The second most frequently identified area that respondents felt would improve their ability to manage CWS was more experience working with the population. Decreased fluency-related clinical practicum opportunities and relatively low numbers of CWS on the average caseload suggest that many school-based SLPs do not have sufficient experience managing CWS, especially when compared with higher-incidence disorders. As suggested by St. Louis and Durrenberger (1993), clinicians seem to be more comfortable treating disorders in which they have acquired the most experience.

Respondents to the current survey also indicated that expert mentorship would increase their abilities to manage CWS. ASHA approved the creation of a Specialty Board on Fluency Disorders in 1998 (Specialty Board on Fluency Disorders, n.d.). Demands for becoming a Board Recognized Fluency Specialist are stringent; current requirements include completing over 100 hours of both educational and clinical training in fluency disorders, and they are re-evaluated every three years to ensure that they have kept up-to-date on continuing education on fluency-related topics. The Specialty Board on Fluency Disorders reports that Board Recognized Fluency Specialists commonly consult with school-based clinicians to provide mentorship and training (Specialty Board

on Fluency Disorders, n.d.), but it is unknown how frequently this occurs. The number of respondents to the current survey reporting a need for mentorship suggests that the skills of Board Recognized Fluency Specialists are not being adequately utilized in the California public schools.

In response to an open-ended question, several respondents to the current survey stated that development of more effective treatment techniques was needed for them to adequately treat CWS. However, it is observed that a large percentage of respondents to the current survey reported that adequate treatment techniques exist for treating CWS of various ages. Over 80% of respondents indicated that adequate therapy techniques exist for preschool and elementary-age CWS, and 79% indicated adequate techniques exist for adolescents. When asked to rate the perceived success of therapy for different age groups, most respondents indicated treatment techniques for CWS were either somewhat or very successful.

Several respondents indicated that further training in counseling was another area that would increase their abilities to manage CWS. However, the number of respondents to the current survey that reported receiving no counseling training was relatively low; only 35% of respondents indicated that they had not received any formal training during their graduate program or CFY in providing counseling to clients and their families. These results are much different than those reported by Rosenberg (1997), who found that 82% of speech-language pathology graduates desired more counseling training (as cited in Luterman, 2001, p. xv). The results of the current study suggest that the decision by ASHA to eliminate specific parameters on obtaining the counseling skills required by

their standards has not resulted in the elimination of counseling training opportunities by graduate programs and CFY supervisors.

Caseload Management

Similar to respondents to the survey by Kelly et al. (1997), the majority of respondents to the current survey preferred to use a variety of stuttering treatment techniques with CWS. However, respondents to the current survey were less likely to use operant conditioning as a treatment technique than other common stuttering treatments. This result is notable because the treatment for CWS for which there is currently the best evidence, the Lidcombe program, is considered an operant-conditioning technique. When asked to name any commercially available materials or programs used to treat CWS, only one respondent to the current survey reported using the Lidcombe program. These results were consistent with the findings of Cooper and Cooper (1996), who reported that confidence in the efficacy of operant conditioning as a treatment for stuttering had decreased by the 1990's.

Though the Lidcombe program is the treatment for CWS for which there is the *best* evidence, there are other stuttering treatment techniques for which evidence exists. As discussed previously, fluency-shaping techniques have been found effective in PWS over the age of seven. Examples of effective fluency-shaping programs include (a) the Gradual Increase in Length and Complexity of Utterance program, which combines techniques of fluency shaping and operant conditioning, and (b) prolonged speech, a component of the fluency-shaping technique (Bothe et al., 2006). Over 53% of respondents to the current survey used fluency-shaping techniques to manage CWS. In

addition, many of the commercially available materials or programs that respondents reported using to treat CWS were based on a fluency shaping approach (e.g., Snooky Snail, Turtletalk, the Monterey fluency program). In other words, many respondents are using techniques to manage CWS for which there is some evidence base, but they are not using the technique for which the best evidence exists.

It is puzzling why more SLPs are not using the Lidcombe program. One reason might have to do with how SLPs find information on effective treatments. Treatment efficacy studies are often presented in professional journals. There is some indication that SLPs do not consult academic journals for information on effective treatments (Bernstein Ratner, 2005).

Another reason that SLPs are not using the Lidcombe program might be that the program was developed outside the United States. Therefore, the Lidcombe program may not be easily accessible by clinicians working in the United States. Only two clinicians in the United States belong to the Lidcombe Program Trainers Consortium (Australian Stuttering Research Centre, 2007). This could indicate that relatively few training opportunities exist in the United States.

A final reason that SLPs may not be using the Lidcombe program is that it uses a different service delivery model than the pull-out, direct therapy model traditionally used in public schools. As noted above, only 66% of respondents to the survey by Brisk et al. (1997) reported feeling comfortable providing counseling to parents of CWS. The Lidcombe program was developed in a clinical setting in which the SLP trains parents and then acts mainly as a counselor and expert consultant. This suggests that providing

the type of treatment used by the Lidcombe program is uncomfortable for many school-based clinicians.

Limitations

Response Inconsistencies

Questions asked in the current survey that yielded inconsistent responses included (a) the number of respondents that reported being Board Recognized Fluency Specialists, and (b) the number of clinical practicum hours obtained by respondents with clients of different ages.

Nine respondents to the current survey reported being Board Recognized Fluency Specialists. The validity of this response is questionable for two reasons: (a) the number of respondents who claimed to be Board Recognized Fluency Specialists represents 41% ($n = 9/22$) of the total number of California-based Board Recognized Fluency Specialists (Specialty Board on Fluency Disorders, n.d.). Because this survey was sent to only 500 of the estimated 8,900 SLPs working in the state of California (California Employment Development Department, 2008), such a high response rate seems unlikely, and (b) the Specialty Board on Fluency Disorders requires specialists to complete 45 continuing education hours every three years in order to retain their board recognition (Specialty Board on Fluency Disorders, n.d.). Six of the nine respondents who reported being Board Recognized Specialists reported taking no fluency-related continuing education courses in the past five years. This response suggests that at least six of the respondents were not in reality Board Recognized Specialists.

Responses to questions regarding the number of clinical practicum hours obtained with fluency disordered clients also yielded inconsistent results. Ten responses were discarded because the total number of hours reported did not equal the sum of the number of hours reported with clients from each age group. For example, one respondent stated that he or she had completed a total of 50 clinical practicum hours with PWS. Yet in the following question, the same respondent stated that he or she had completed 30 hours with school-age CWS and 15 hours with adult-age PWS, for a total of 45 hours.

Conclusions

- Changes in ASHA standards have not resulted in decreased fluency course work in graduate programs. Respondents who graduated before and after the 1993 changes in ASHA standards report taking the same number of fluency courses. On average, respondents to the current survey are taking the same amount of fluency course work in their graduate programs as respondents to surveys performed in the 1990's.
- The number of clinical practicum opportunities with PWS has decreased since the 1993 changes in ASHA standards. Fewer than 70% of respondents to the current survey who graduated after 1993 reported obtaining clinical practicum hours with PWS.
- Though the majority of respondents to the current survey reported feeling competent in managing CWS, the percentage of respondents who reported feeling competent was notably lower than the percentage of respondents to surveys performed in the 1990's who reported feeling competent.

- Respondents who perceived themselves as less than competent at managing CWS most commonly named continuing fluency education as the opportunity that would help them increase their abilities.
- Respondents to the current survey reported using a variety of treatment approaches with CWS. The majority of respondents reported using techniques to increase overall communication abilities, modify stuttering, modify the child's environment, and shape fluency.
- Respondents to the current survey are using a combination of evidence-based treatments and historically used treatments. Though over 50% of respondents reported using fluency-shaping techniques for which some empirical evidence exists, respondents were more likely to use treatments that have been used historically but for which little favorable evidence exists.

Suggestions for Further Research

In 2005, ASHA again changed the eligibility requirements for obtaining a CCC-SLP. One area of future research would be to compare education, training, and perceived competence levels of SLPs that graduated between 1993-2005 to those that graduated after the 2005 changes went into effect.

Respondents cited a desire for experts mentors to aid them in better serving CWS. This is one area where Board Recognized Fluency Specialists can be of service. As stated previously, it is unknown if Board Recognized Fluency Specialists are commonly being utilized by SLPs working in public schools. One area of future research would be examining if Board Recognized Fluency Specialists are commonly consulting with public

school clinicians. How often do school-based clinicians consult with Board Recognized Fluency Specialists? If Board Recognized Fluency Specialists are indeed providing consulting services in public schools, under what circumstances are their skills being utilized? Does consulting with Board Recognized Fluency Specialists increase the perceived competence of school-based clinicians in regards to managing CWS? If Board Recognized Fluency Specialists are not being consulted by school-based clinicians, why not, and how can school-based clinicians better utilize their skills?

Other possible areas of future research regard evidence-based practice. As noted above, Bernstein Ratner (2005) stated that there is some indication that SLPs do not consult academic journals for information on effective treatments. She noted “just because you produce evidence doesn’t mean that it gets used” (p. 178). Future research would investigate how SLPs find information on treatments, and how to better disseminate information on best practices.

References

- Adams, M. R. (1990). The Demands and capacities model I: Theoretical elaborations. *Journal of Fluency Disorders, 15*, 135-141.
- Altholz, S., & Golensky, M. (2004). Counseling, support, and advocacy for clients who stutter. *Health and Social Work, 29*, 197-205.
- Ambrose, N. G., & Yairi, E. (1999). Normative disfluency data for early childhood stuttering. *Journal of Speech, Language, and Hearing Research, 42*, 895-909.
- Ambrose, N. G., & Yairi, E. (2002). The Tudor study: Data and ethics. *American Journal of Speech-Language Pathology, 11*, 190-203.
- Ambrose, N. G., Yairi, E., & Cox., N. (1993). Genetic aspects of early childhood stuttering. *Journal of Speech and Hearing Research, 36*, 701-706.
- American Speech-Language-Hearing Association (1995). *Guidelines for practice in stuttering treatment* [Guidelines]. Retrieved October 26, 2008, from <http://www.asha.org/docs/html/GL1995-00048.html>.
- American Speech-Language-Hearing Association (2005a). *Background information and standards and implementation for the certificate of clinical competence in speech-language pathology* [Standards/Quality Indicators]. Retrieved February 26, 2008, from http://www.asha.org/about/membership-certification/handbooks/slp/slp_standards_new.htm.
- American Speech-Language-Hearing Association (2005b). *Evidence-based practice in communication disorders* [Position Statement]. Retrieved August 27, 2008, from <http://www.asha.org/docs/html/PS2005-00221.html>.
- American Speech-Language-Hearing Association (2007). *Scope of practice in speech-language pathology* [Scope of Practice]. Retrieved March 2, 2008, from <http://www.asha.org/docs/html/SP2007-00283.html>.
- American Speech-Language-Hearing Association (2008). *Continuing education*. Retrieved July 13, 2008, from <http://www.asha.org/about/Continuing-Ed>.
- Andrews, G., Morris-Yates, A., Howie, P., & Martin, N. G. (1991). Genetic factors in stuttering determined [Letter to the Editor]. *Archives of General Psychiatry, 48*, 1034-1035.
- Bender, J. F. (1939). *The personality structure of stuttering*. New York: Pitman.

- Bender, J. F. (1942). The stuttering personality. *American Journal of Orthopsychiatry*, 12, 140-146.
- Bernstein Ratner, N. (2004). Caregiver-child interactions and their impact on children's fluency: Implications for treatment. *Language, Speech, and Hearing Services in Schools*, 35, 46-56.
- Bernstein Ratner, N. (2005). Evidence-based practice in stuttering: Some questions to consider. *Journal of Fluency Disorders*, 30, 163-188.
- Bernstein Ratner, N. & Healey, E. C. (1999). Bridging the gap between research and practice: An overview. In N. Bernstein Ratner & E. C. Healey (Eds.), *Stuttering research and practice: Bridging the gap* (pp. 1-12). Mahwah, NJ: Lawrence Erlbaum.
- Biggs, B., & Sheehan, J. (1969). Punishment or distraction? Operant stuttering revisited. *Journal of Abnormal Psychology*, 74, 256-262.
- Bloodstein, O. (1986). Semantics and beliefs. In G.H. Shames & H. Rubin (Eds.), *Stuttering then and now* (pp. 130-139). Columbus, OH: Merrill.
- Bloodstein, O. (1992). Response to Hamre: Part I. *Journal of Fluency Disorders*, 17, 29-32.
- Bloodstein, O. (1995). *A handbook on stuttering* (5th ed.). San Diego, CA: Singular.
- Booth, S. J. (1999). The necessity for improvements in twin studies of stuttering. *Contemporary Issues in Communication Science and Disorders*, 26, 101-105.
- Bothe, A. K., Davidow, J. H., Bramlett, R. E., & Ingham, R. J. (2006). Stuttering treatment research 1970-2005: I. Systematic review incorporating trial quality assessment of behavioral, cognitive, and related approaches. *American Journal of Speech-Language Pathology*, 15, 321-341.
- Brisk, D. J., Healey, E. C., & Hux, K. A. (1997). Clinicians' training and confidence associated with treating school-age children who stutter: A national survey. *Language, Speech, and Hearing Services in Schools*, 28, 164-176.
- Brookshire, R. H. (2003). *Introduction to neurogenic communication disorders* (6th ed.). St. Louis, MO: Mosby.
- Brutten, G. J. (1970). Two-factor behavior theory and therapy. In Speech Foundation of America (Ed.), *Conditioning in stuttering therapy* (pp. 37-56). Memphis, TN: Speech Foundation of America.

- Buchel, C. & Sommer, M. (2004). What causes stuttering. *PLoS Biology*, 2, 159-163.
- Butcher, C., McFadden, D., Quinn, B., & Ryan, B. P. (2003). The effects of language training on stuttering in young children, with and without contingency management. *Journal of Developmental and Physical Disabilities*, 15, 255- 280.
- Conture, E. G. (1999). The best day to rethink our research agenda is between yesterday and tomorrow. In N. Bernstein Ratner & E. C. Healey (Eds.), *Stuttering research and practice: Bridging the gap* (pp. 13-26). Mahwah, NJ: Lawrence Erlbaum.
- Cooper, E.B., Cady, B.B., & Robbins, C. J. (1970). The effect of the verbal stimulus words right, wrong, and tree on the disfluency rates of stutterers and non-stutterers. *Journal of Speech and Hearing Research*, 13, 239-244.
- Cooper, E. B., & Cooper, C. S. (1996). Clinician attitudes towards stuttering: Two decades of change. *Journal of Fluency Disorders*, 21, 119-135.
- Coriat, I. H. (1943). The psychoanalytic conception of stammering. *Nervous Child*, 2, 167-171.
- Cross, D.E., & Cooper, E. B. (1976). Self-versus investigator- administered presumed fluency reinforcing stimuli. *Journal of Speech and Hearing Research*, 19, 241-246.
- Crowe, T. A. (1997). Counseling: Definition, history, and rationale. In T. A. Crowe (Ed.), *Applications of counseling in speech-language pathology and audiology* (pp. 3-29). Baltimore: Williams and Wilkins.
- Culpepper, B., Mendel, L. L., & McCarthy, P. A. (1994). Counseling experience and training offered by ESB-accredited programs: An update. *ASHA*, 36, 55-58.
- Daly, D. D., & Kimbarow, M. L. (1978). Stuttering as operant behavior: The effects of the verbal stimuli right, wrong, and tree on the disfluency rates of school-age stutterers and non-stutterers. *Journal of Speech and Hearing Research*, 21, 589-597.
- Darley, F. L. (1955). The relationship of parental attitudes and adjustments to the development of stuttering. In W. Johnson (Ed.), *Stuttering in children and adults: Thirty years of research at the University of Iowa* (pp. 74-153). Minneapolis, MN: University of Minnesota.

- Davis, D. M. (1939). The relation of repetitions in the speech of young children to certain measures of language maturity and situational factors: Part I. *Journal of Speech Disorders, 4*, 303-318.
- Despert, J. L. (1946). Psychosomatic study of fifty stuttering children I. Social, physical, and psychiatric findings. *American Journal of Orthopsychiatry, 16*, 100-113.
- Duffy, J. R. (2005). *Motor speech disorders* (2nd ed.). St. Louis, MO: Elsevier Mosby.
- Dworzynski, K., Remington, A., Rijdsdijk, F., Howell, P., & Plomin, R. (2007). Genetic etiology in cases of recovered and persistent stuttering in an unselected, longitudinal sample of young twins. *American Journal of Speech-Language Pathology, 16*, 169-178.
- Felsenfeld, S. (2002). Finding susceptibility genes for developmental disorders of speech: The long and winding road. *Journal of Communication Disorders, 35*, 329-345.
- Felsenfeld, S., Kirk, K. M., Zhu, G., Statham, D. J., Neale, M. C., & Martin, M. G. (2000). A study of the genetic and environmental etiology of stuttering in a selected twin sample. *Behavior Genetics, 20*, 359-366.
- Felsenfeld, S., & Plomin, R. (1997). Epidemiological and offspring analyses of developmental speech disorders using data from the Colorado adoption project. *Journal of Speech Language and Hearing Research, 40*, 778-791.
- Flanagan, B. (1986). Operant stuttering update. In G. H. Shames & H. Rubin (Eds.), *Stuttering then and now* (pp. 217-234). Columbus, OH: Merrill.
- Flanagan, B., Goldiamond, I., & Azrin, N. (1958). Operant stuttering: The control of stuttering behavior through response-contingent consequences. *Journal of the Experimental Analysis of Behavior, 1*, 173-177.
- Franken, M., Kielska-Van der Schalk, C., & Boelens, H. (2005). Experimental treatment of early stuttering: A preliminary study. *Journal of Fluency Disorders, 30*, 189-199.
- Fraser, M. (1966). To the reader. In Speech Foundation of America (Ed.), *Stuttering: Training the therapist* (pp. 3). Memphis, TN: Speech Foundation of America.
- Gottwald, S. R., & Starkweather, C. W. (1995). Fluency intervention for preschoolers and their families in the public schools. *Language, Speech, and Hearing Services in the Schools, 26*, 117-126.

- Guitar, B. (2006). *Stuttering: An integrated approach to its nature and treatment* (3rd ed.). Philadelphia: Lippincott.
- Guitar, B., & Conture, E. G. (2008). *Seven tips for talking with your child*. Retrieved September 23, 2008, from <http://www.stutteringhelp.org>.
- Guitar, B., & Marchinkoski, L. (2001). Influence of mother's slower speech on their children's speech rate. *Journal of Speech, Language, and Hearing Research, 44*, 853-861.
- Hamre, C. (1992). Stuttering prevention I: Primacy of identification. *Journal of Fluency Disorders, 17*, 3-23.
- Harrison, E., Onslow, M., & Menzies, R. (2004). Dismantling the Lidcombe program of early stuttering intervention: Verbal contingencies for stuttering and clinical measurement. *International Journal of Language and Communication Disorders, 39*, 257-267.
- Howie, P. M. (1981). Concordance for stuttering in monozygotic and dizygotic twin pairs. *Journal of Speech and Hearing Research, 24*, 317-321.
- Ingham, J. C. (2003). Evidence-based treatment of stuttering I: Definition and application. *Journal of Fluency Disorders, 28*, 197-207.
- Ingham, R. J., & Cordes, A. K. (1999). Treatment decisions for young children who stutter: Further concerns and complexities. *American Journal of Speech-Language Pathology, 7*, 10-19.
- Johnson, W. (1942). A study of the onset and development of stuttering. *Journal of Speech Disorders, 7*, 251-257.
- Johnson, W. (1955). A study of the onset and development of stuttering. In W. Johnson (Ed.), *Stuttering in children and adults: Thirty years of research at the University of Iowa* (pp. 37-73). Minneapolis, MN: University of Minnesota.
- Johnson, W. & Associates (1959). *The onset of stuttering*. Minneapolis, MN: University of Minnesota.
- Jones, M., Onslow, M., Packman, A., Williams, S., Ormond, T., Schwarz, I., & Gebiski, V. (2005). Randomised controlled trial of the Lidcombe programme of early stuttering intervention. *British Medical Journal, 331*, 659-661.

- Kelly, E. M., Martin, J. S., Baker, K. E., Rivera, N. I., Bishop, J. E., Krizizke, C. B., Stettler, D. S., & Stealy, J. M. (1997). Academic and clinical preparation and practices of school speech-language pathologists with people who stutter. *Language, Speech, and Hearing Services in Schools, 28*, 195-212.
- Kidd, K. K. (1980). Genetic models of stuttering. *Journal of Fluency Disorders, 5*, 187-201.
- LaFollette, A. C. (1956). Parental environment of stuttering children. *Journal of Speech and Hearing Disorders, 21*, 202-207.
- Lattermann, C., Euler, H. A., & Neumann, K. (2008). A randomized control trial to investigate the impact of the Lidcombe program on early stuttering in German-speaking preschoolers. *Journal of Fluency Disorders, 33*, 52-65.
- Luterman, D. M. (2001). *Counseling persons with communication disorders and their families* (4th ed.). Austin, TX: Pro-Ed.
- Manning, W. H. (2000). Appeal of the demands and capacities model: Conclusions. *Journal of Fluency Disorders, 25*, 377-383.
- Manning, W. H. (2001). *Clinical decision making in fluency disorders* (2nd ed.). San Diego, CA: Singular.
- Martin, N. G., & Martin, P. G. (1975). The inheritance of scholastic abilities in a sample of twins: I. Ascertainment of the sample and diagnosis of zygosity. *Annals of Human Genetics, 39*, 213-218.
- Martin, R. R., Kuhl, P., & Haroldson, S. (1972). An experimental treatment with two preschool stuttering children. *Journal of Speech and Hearing Research, 15*, 743-752.
- Meltzer, H. (1944). Personality differences between stuttering and non-stuttering children as indicated by the Rorschach test. *Journal of Psychology, 17*, 39-59.
- Murphy, A. T. (1970). Stuttering, behavior modification, and the person. In Speech Foundation of America (Ed.), *Conditioning in stuttering therapy* (pp. 99-109). Memphis, TN: Speech Foundation of America.
- Onslow, M. & Packman, A. (1999). The Lidcombe program of early stuttering intervention. In N. Bernstein Ratner & E. C. Healey (Eds.), *Stuttering research and practice: Bridging the gap* (pp. 193-209). Mahwah, NJ: Lawrence Erlbaum.

- Packman, A., Onslow, M., & Attanasio, J. (2004). The demands and capacities model: Implications for evidence-based practice in the treatment of early stuttering. In A. K. Bothe (Ed.), *Evidence-based treatment of stuttering* (pp. 65-79). Mahwah, NJ: Lawrence Erlbaum.
- Perkins, W. H. (1970). Physiological studies. In J. G. Sheehan (Ed.), *Stuttering: Research and therapy* (pp. 190-238). New York: Harper and Row.
- Reynolds, G. (2006). The stuttering doctor's "monster study". In R. Goldfarb (Ed.), *Ethics: A case study from fluency* (pp. 1-12). San Diego, CA: Plural.
- Riaz, N., Steinberg, S., Ahmad, J., Pluzhnikov, A., Riazuddin, S., Cox, N. J., & Drayna, D. (2005). Genomewide significant linkage to stuttering on chromosome 12. *American Journal of Human Genetics*, 76, 647-651.
- Richardson, L. H. (1944). The personality of stutterers. *Psychological Monographs*, 56, 1-41.
- Roth, F.P., & Worthington, C.K. (2005). *Treatment resource manual for speech-language pathology* (3rd ed.). Clifton Park, NY: Thomson Delmar.
- Shames, G. H. & Egolf, D. B. (1976). *Operant conditioning and the management of stuttering: A book for clinicians*. Englewood Cliffs, NJ: Prentice Hall.
- Shames, G. H., & Sherrick, C. E. (1963). A discussion of nonfluency and stuttering as operant behavior. *Journal of Speech and Hearing Disorders*, 28, 3-18.
- Sheehan, J. G. (1970a). Personality approaches. In J. G. Sheehan (Ed.), *Stuttering: Research and therapy* (pp.60-169). New York: Harper and Row.
- Sheehan, J. G. (1970b). Role-conflict theory. In J. G. Sheehan (Ed.), *Stuttering: Research and therapy* (pp.2-35). New York: Harper and Row.
- Shugart, Y. Y., Mundorff, J., Kilshaw, J., Doheny, K., Doan, B., Wanyee, J., Green, E. D., & Drayna, D. (2004). Results of a genome-wide linkage scan for stuttering. *American Journal of Genetics*, 124A, 133-135.
- Skinner, B. F. (1957) *Verbal behavior*. New York: Appleton Century Crofts.
- Smith, A. & Weber, C. (1988).The need for an integrated perspective on stuttering. *ASHA*, 30, 30-32.
- Snyder, M. A. (1962). Evaluating the personality of the stutterer. In D. A. Barbara (Ed.), *The psychotherapy of stuttering* (pp. 29-47). Springfield, IL: Charles C. Thomas.

- Sommers, R. K., & Caruso, A. J. (1995). Inservice training in speech-language pathology: Are we meeting the needs for fluency training? *American Journal of Speech-Language Pathology*, 4, 22-28.
- Specialty Board on Fluency Disorders (n.d.) *Specialty board on fluency disorders*. Retrieved July 14, 2008, from <http://www.stutteringspecialists.org>.
- St. Louis, K. O. (2008). *Cluttering: Some guidelines*. Retrieved September 23, 2008, from <http://www.stutteringhelp.org>.
- St. Louis, K. O., & Durrenberger, C. H. (1993). What communication disorders do experienced clinicians prefer to manage? *ASHA*, 35, 23-31.
- Starkweather, C. W. (1999). The effectiveness of stuttering therapy: An issue for science? In N. Bernstein Ratner & E. C. Healey (Eds.), *Stuttering research and practice: Bridging the gap* (pp. 231-244). Mahwah, NJ: Lawrence Erlbaum.
- Starkweather, C. W. & Gottwald, S. R. (1990). The demands and capacities model II: Clinical applications. *Journal of Fluency Disorders*, 15, 143-157.
- Suresh, R., Ambrose, N., Roe, C., Pluzhnikov, A., Wittke-Thompson, J. K., Ng, M. C. Y., Wu, X., Cook, E. H., Lundstrom, C., Garsten, M., Ezrati, R., Yairi, E., & Cox, N. J. (2006). New complexities in the genetics of stuttering: Significant sex-specific linkage signals. *American Journal of Human Genetics*, 78, 554-563.
- Throneburg, R. N. & Yairi, E. (1994). Temporal dynamics of repetitions during the early stage of childhood stuttering: An acoustic study. *Journal of Speech and Hearing Research*, 37, 1067-1075.
- Travis, L. E. (1957). The unspeakable feelings of people, with special reference to stuttering. In L. E. Travis (Ed.), *Handbook of speech pathology* (pp. 916-946). New York: Appleton Century Crofts.
- Van Riper, C. (1971). *The nature of stuttering*. Englewood Cliffs, NJ: Prentice Hall.
- Van Riper, C. (1981). An early history of ASHA. *ASHA*, 23, 855-858.
- Van Riper, C. (1992). Some ancient history. *Journal of Fluency Disorders*, 17, 25-28.
- Viswanath, N., Lee, H. S., & Chakraborty, R. (2004). Evidence for a major gene influence on persistent developmental stuttering. *Human Biology*, 76, 401-412.

- Wingate, M. E. (1959). Calling attention to stuttering. *Journal of Speech and Hearing Research*, 2, 326-335.
- Wingate, M. E. (1962). Evaluation and stuttering, Part I: Speech characteristics of young children. *Journal of Speech and Hearing Disorders*, 27, 106-115.
- Wingate, M. E. (1997). *Stuttering: A short history of a curious disorder*. Westport, CT: Bergin and Garvey.
- Wittke-Thompson, J. K., Ambrose, N., Yairi, E., Roe, C., Cook, E. H., Ober, C., & Cox, N. J. (2007). Genetic studies of stuttering in a founder population. *Journal of Fluency Disorders*, 32, 33-50.
- Yairi, E. (1981). Disfluencies of normally speaking two-year-old children. *Journal of Speech and Hearing Research*, 24, 490-495.
- Yairi, E. (1997). Disfluency characteristics of childhood stuttering. In R. F. Curlee & G. M. Siegel (Eds.), *Nature and treatment of stuttering: New directions* (pp. 49-78). Boston: Allyn and Bacon.
- Yairi, E. (2006). The Tudor study and Wendell Johnson. In R. Goldfarb (Ed.), *Ethics: A case study from fluency* (pp. 35-62). San Diego, CA: Plural.
- Yairi, E., & Ambrose, N. G. (1999). Early childhood stuttering I: Persistency and recovery rates. *Journal of Speech, Language, and Hearing Research*, 42, 1097-1112.
- Yairi, E., & Ambrose, N. G. (2005). *Early childhood stuttering*. Austin, TX: Pro-Ed.
- Yairi, E., Ambrose, N. G., and Cox, N. (1996). Genetics of stuttering: A critical review. *Journal of Speech and Hearing Research*, 39, 771-784.
- Yairi, E. & Lewis, B. (1984). Disfluencies at the onset of stuttering. *Journal of Speech and Hearing Research*, 27, 154-159.
- Yaruss, J. S. (1997). Clinical measurement of stuttering behaviors. *Contemporary Issues in Communication Science and Disorders*, 24, 33-44.
- Yaruss, J., Coleman, C., & Hammer, D. (2006). Treating preschool children who stutter: Description and preliminary evaluation of a family-focused treatment approach. *Language, Speech, and Hearing Services in Schools*, 37, 188-136.
- Yaruss, J. S., & Quesal, R. W. (2002). Academic and clinical education in fluency disorders: An update. *Journal of Fluency Disorders*, 27, 43-63.

Zebrowski, P. M., & Conture, E. G. (1989). Judgement of disfluency by mothers of stuttering and normally fluent children. *Journal of Speech and Hearing Research*, 32, 625-634.

Appendix A

Questionnaire

Informed Consent Agreement

1. April 7, 2008

Agreement to Participate in Research

Assessment and treatment of children who stutter: A survey of school-based clinicians' attitudes and training

Investigator: Megan Zaninovich
San Jose State University
Department of Communicative Disorders and Sciences

- a) You have been asked to participate in a research study investigating attitudes, educational preparation, and perceived competence of school-based speech-language pathologists in regards to assessing and treating children who stutter (CWS).
- b) You will be asked to fill out a survey regarding your personal attitudes, and academic and clinical preparation to assess and treat CWS. You will also be asked about the methods you employ to treat this population.
- c) No risks are anticipated by participating in this study. The field of speech-language pathology is expected to benefit from the study by updating information that is, in some cases, over a decade old.
- d) Although the results of this study may be published, no information that could identify you will be included.
- e) Questions about this research may be addressed to Megan Zaninovich, (xxx) xxx-0498. Complaints about this research may be presented to Michael Kimbarow, Ph.D., Department Chair, Communicative Disorders and Sciences, (xxx) xxx-3691. Questions about a research subject's rights or research-related injury may be presented to Pamela Stacks, Ph.D., Associate Vice President, Graduate Studies and Research, at (xxx) xxx-2480.
- f) No service of any kind, to which you are otherwise entitled, will be lost or jeopardized if you choose to "not participate" in the study.
- g) Your consent is being given voluntarily. You may refuse to participate in the entire study or in any part of the study. You have the right to not answer

questions you do not wish to answer. If you decide to participate in the study, you are free to withdraw at any time without any negative effect on your relations with San Jose State University or with any other participating institutions or agencies.

h) Please keep a copy of this form for your own records. By agreeing to participate in this study, it is implied that you have read and understand the above information.

i) You may request a copy of study results by emailing the author at xxx@hotmail.com.

j) Because this survey is in an electronic format, your typed initials will serve as evidence of your informed consent. If you agree to the terms of consent listed above, please type your initials and today's date:

(Initials) _____

(Date) _____

Background Information

2. In what year did you first obtain a graduate degree in speech-language pathology?

3. In what year did you first obtain a credential to work in the California public school system as a speech-language pathologist (SLP)? _____

4. Do you currently hold a Certificate of Clinical Competence in Speech-Language Pathology (CCC-SLP)? Y N

5. Are you recognized as a clinical specialist by the American Speech-Language Hearing Association Specialty Board on Fluency Disorders (ASHA Special Interest Division 4)? Y N

6. How many REQUIRED graduate level courses did you take that were completely devoted to fluency?

0 1 2 3+

Partially devoted to fluency?

0 1 2 3+

7. How many ELECTIVE graduate courses did you take that were completely devoted to fluency?

0 1 2 3+

Partially devoted to fluency?

0 1 2 3+

8. Did the graduate courses you took on fluency include the following components?
(check all that apply)
theory _____
evaluation/assessment _____
treatment _____
9. Did you complete clinical hours in fluency as part of your graduate program?
Y N
10. If you responded yes to #9, how many clinical hours did you complete?
Total Hours _____
Hours devoted to assessment _____
Hours devoted to treatment _____
11. If you responded yes to #9, how many clinical hours were spent with the following age groups? Preschool age (0- 4 years) _____
Elementary school age (5-12 years old) _____
Adolescents (13-18 years old) _____
Adults (18 and older) _____
12. Do you feel the fluency course requirements offered by your graduate program adequately prepared you to evaluate and treat children who stutter (CWS)? Y N
13. Did you receive training in counseling techniques as part of your graduate program or Clinical Fellowship Year (CFY)? Y N
14. On a scale of 1-5, 1 indicating completely unprepared and 5 completely prepared, please indicate how prepared you were to treat CWS when you completed your graduate degree.
1 2 3 4 5
(completely unprepared) (somewhat prepared) (completely prepared)
15. On a scale of 1-5, 1 indicating completely unprepared and 5 completely prepared, please indicate how prepared you were to treat CWS when you finished your Clinical Fellowship Year?
1 2 3 4 5
(completely unprepared) (somewhat prepared) (completely prepared)
16. Have you taken any continuing education courses on fluency disorders in the last 5 years? Y N
17. If you answered yes to #16, please indicate the number of hours of continuing education courses on fluency disorders you obtained in the last 5 years. _____

18. Do you plan on taking any continuing education courses on fluency disorders in the future? Y N

Efficacy of stuttering treatment

19. (a) On a scale of 1-5, 1 being completely unsuccessful and 5 completely successful, please indicate how successful you feel stuttering treatment is for pre-school age CWS (0 – 4 years):

1 2 3 4 5
(completely unsuccessful) (somewhat successful) (completely successful)

(b) Elementary school-age CWS (5 – 12 years):

1 2 3 4 5
(completely unsuccessful) (somewhat successful) (completely successful)

(c) Adolescents who stutter (13 – 18 years):

1 2 3 4 5
(completely unsuccessful) (somewhat successful) (completely successful)

(d) Adults who stutter (18 and older):

1 2 3 4 5
(completely unsuccessful) (somewhat successful) (completely successful)

20. True or false? There are currently adequate techniques for treating:

(a) Preschool children that stutter. T F

(b) Elementary school students that stutter. T F

(c) Adolescents that stutter. T F

(d) Adults that stutter. T F

21. On a scale of 1-5, 1 indicating you completely disagree and 5 indicating you completely agree, please indicate if you agree that competency in counseling techniques is necessary when treating CWS?

1 2 3 4 5
(completely disagree) (somewhat agree) (completely agree)

22. Overall, do you feel you possess adequate skills for working with CWS? Y N
If no, what skills do you feel would help you successfully treat CWS?

Caseload

23. What is your total student caseload? _____
24. How many CWS are on your current caseload? _____
25. Please list the number of CWS you treat in each of the following age groups:
 Preschool (0-4 years) _____
 Elementary (5-12 years) _____
 Adolescents (13-18 years) _____
26. Which of the following treatment philosophies do you incorporate when treating CWS (check all that apply):
 Fluency Shaping approach (e.g. operant conditioning, goal is extinction of all stuttering behaviors)
 Stuttering Modification approach (e.g. Van Riper approach, reduction of avoidance behaviors, reduction of secondary characteristics, cognitive-behavioral therapy or other counseling techniques)
 Procedures to Increase Overall Communication Abilities (e.g. practicing communication in group settings, positive feedback for fluent speech)
 Environmental Modifications (e.g. modification of parent-child interaction patterns, "indirect" treatment)
27. Please list the names of any commercially available stuttering treatments you use to treat CWS:

28. In which setting do you treat CWS? (check all that apply)
 Individual only
 Group only
 Combination of Individual and Group sessions
 In the classroom
29. When you discharge a CWS from your caseload, which of the following follow-up strategies have you employed? (check all that apply)
 follow-up with classroom teacher
 follow-up with parents
 follow-up session with child
 none of the above
 I have never dismissed a CWS from therapy

Thank you for completing the survey!