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Assessing Speech Language Pathologists' (SLP) Level of Knowledge, Training, and Experience
with Stuttering and Cluttering: A Pilot Study

By

Kristen Leucuta

A thesis

submitted in partial fulfillment

of the requirements for the degree of

Master of Science in the Department of Communication Science and Disorders

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Committee Approval

To the Graduate Faculty:

The members of the committee appointed to examine the thesis of Kristen Leucuta find it satisfactory and recommend that it be accepted.

Daniel Hudock,
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Human Subjects Committee Approval Page

July 29, 2019

Kristen Leucuta
Communication Sciences & Disorders
MS 8116

RE: regarding study number IRB-FY2020-4: Assessing Speech Language Pathologists' (SLP) Level of Knowledge and Experience with Cluttering

Dear Ms. Leucuta:

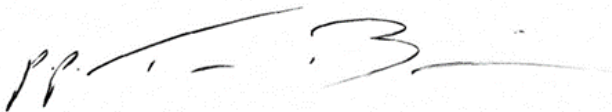
I agree that this study qualifies as exempt from review under the following guideline: Category 2.(i). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording). The information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects. This letter is your approval, please, keep this document in a safe place.

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Sincerely,

A handwritten signature in black ink, appearing to read 'R. Baergen', with a long horizontal line extending to the right.

Ralph Baergen, PhD, MPH, CIP
Human Subjects Chair

Assessing Speech Language Pathologists' (SLP) Level of Knowledge, Training, and Experience
with Stuttering and Cluttering: A Pilot Study

Thesis Abstract--Idaho State University (2020)

Purpose: Speech Language Pathologists (SLPs) consistently rate fluency disorders as their most feared and least desired disorder to treat (Kelly et al., 1997; Maviş et al., 2013; Yaruss, 1999; Yaruss & Quesal, 2002). Often, this is attributed to lack of training and clinical experience. This pilot study examined SLPs' knowledge, accuracy, training and experience with stuttering and cluttering as compared to more common phonological disorders.

Method: A 56-item questionnaire was presented diagnostic terms and stimuli videos to assess clinician's knowledge, accuracy, training, and experience, with stuttering, cluttering, to comparative phonological disorders.

Results: Correlational and factor analyses revealed moderate effect-sizes, between experience items with stuttering to sought knowledge, this wasn't found for cluttering. No significant differences were revealed for accuracy.

Conclusion: Clinicians who have more experience with stuttering and cluttering were not significantly better at identifying characteristics or observed features for stuttering or cluttering.

Keywords: Stutter, Clutter, Fluency, Fluency Disorders

Assessing Speech Language Pathologists' (SLP) Level of Knowledge, Training and Experience with Stuttering and Cluttering: A Pilot Study

In the field of speech language pathology (SLP), research has shown that SLPs are less knowledgeable, less comfortable, and they have less training and experience with stuttering than other communication disorders (Yaruss, 1999; Yaruss & Quesal, 2002). Reasons for this may include lack of continuing education opportunities, lack of knowledge about fluency disorders, lack of knowledge about successful training programs, insufficient coursework, inexperience, and lack of academic training (Crichton-Smith et al., 2003; Sommers and Carusso, 1995; Yaruss & Quesal, 2002).

Cluttering, a sub-diagnosis of fluency disorders, is difficult to define because of a lack of professional consensus regarding the characteristics of the disorder and similarly, there is a paucity of information on the prevalence of cluttering (Daly & Burnett, 1999). Cluttering without concomitant stuttering has been reported to affect anywhere from 0.4% to 11.5 % of the world's population (Daly, 1992; Freund, 1970; Perello, 1970; Simkins, 1973; Zaalen & Reichel, 2015). Stuttering-cluttering and the other types of fluency disorders likely range from 2 to 3% of the population (Zaalen & Reichel, 2015). The expansive range of percentages reported have further perpetuated clinicians' uncertainty and lack of confidence in the diagnosis of people who clutter (PWC). This contributes to the inconsistent diagnosis of PWC. Often, proper diagnosis of cluttering does not occur until 8 years of age (Ward & Scott, 2011). Due to low prevalence, limited research, training, and knowledge available to practicing SLPs, cluttering is often misdiagnosed or not diagnosed at all.

To properly diagnose fluency disorders SLPs must have knowledge of the disorder and accurately identify appropriate characteristics of both overt and covert aspects. Overt speech

disfluencies can be subdivided into categories of stuttering-like-disfluencies and normal nonfluencies. Stuttering-like disfluencies can include within-word disruptions such as sound or syllable repetitions, phoneme prolongations, postural fixations and secondary, concomitant, stuttering behaviors such as excessive eye-blinking, distracting sounds, facial grimaces, head/extremity movements, sound or word avoidances, reduced verbal output, avoidance of social situations and fillers to mask moments of stuttering (Yairi & Seery, 2015). Normal-nonfluencies include interjections, hesitations, and word or phrase revisions. Research reveals that people with fluency disorders do exhibit an increased number of normal nonfluencies in addition to the atypical stuttering-like-disfluencies that are not often present in fluent speaking populations (Culatta & Leeper, 1990). When normal-nonfluencies occur, people are often relaxed, and there isn't a sign of struggle or tension. Normal-nonfluencies can vary based on the day and may increase when tired, excited, unsure, or rushing to talk. Some examples of this can be changing words in a sentence, saying the same sound/syllable more than once in a word, saying the same word more than once in a sentence or adding an extra word in the sentence (Culatta & Leeper, 1990).

Cluttering can occur by itself which is referred to as pure cluttering or in conjunction with stuttering. As a result, the two disorders often have overlapping overt features (i.e., repetitions, prolongations, blocks, interjections, and revisions). Common overt characteristics of cluttering, not shared with stuttering, include poor speech intelligibility, a speaking rate perceived to be too fast or irregular, inappropriate prosody, and the presence of excessive disfluencies.

Covert aspects of fluency disorders include the psychological-emotional-social and functional impacts that one experiences as a consequence of living with a fluency disorder. It is

common for people with a fluency disorder to feel as if they are “drowning” when a moment of disfluency occurs (Hudock, 2014; Silverman, 2004). People with a fluency disorder generally have lower confidence and higher negative thoughts about self, abilities, and traits (Blumgart, Tran, & Craig, 2010; Ginsberg, 2000; Iverach et al., 2009, 2010; Manning & Gayle-Beck, 2013). People with fluency disorders tend to have higher incidences of anxiety, depression, and frequency of suicidal ideation (Blumgart, et al., 2010; Iverach et al., 2009, 2010; Kuster, 2012). People with a fluency disorder may withdraw from society, exhibit decreased social initiation, isolation, and may believe they do not belong or not understood (Hudock, 2014).

Clinicians need to understand both overt and covert features of these disorders, as these aspects are vital for an appropriate diagnosis. With increased understanding of these disorders, clinicians are less likely to stereotype and more likely to accurately diagnose people with fluency disorders (Cooper & Cooper, 1996). Furthermore, when clinicians have more knowledge, experience, and training they can more accurately educate the public on fluency disorders.

Public Knowledge

Currently, neither SLPs nor the public are well informed about fluency disorders (St. Louis & Rustin, 1992; St. Louis & Durrenberger, 1993). To increase public knowledge and reduce negative stereotypes, SLPs need to have increased comfort and competence towards fluency disorders (Yaruss & Quesal, 2002). To do so, more training and experience is needed to help prepare SLPs working with fluency disorders so they can begin to feel more comfortable. As a result, negative stereotypes can be reduced among SLPs and they can begin to educate the public about fluency disorders, as these disorders are frequently stereotyped by a wide range of populations. When the public thinks of stuttering and cluttering, there is a negative stereotype

around the diagnosis of a fluency disorder. There is also a negative stereotype around those who stutter; the public often thinks they are nervous, shy, reserved, excitable, or psychologically affected (Koutsodimitropoulos et al., 2015; Ruscello et al., 1990; St. Louis, 2011, 2012; St. Louis et al., 2014). In general, stereotypes are often influenced by the interactions and experiences they have with fluency disorders (Przepiorka et al., 2013).

Research has found that the presence of a disability or disorder acts as a barrier in social communication and influences social distance from others (Betz et al., 2008; Cooper, & Cooper, 1996; Farrell et al. 2015). This barrier in social communication even influences SLPs' interactions with people who stutter (PWS). SLPs often report feeling uncomfortable assessing and treating PWS (Yaruss & Quesal, 2002). This is because when social distance from others occurs, negative stigmas are reinforced. A stigma is a trait or mark that devalues a group of people (Boyle, 2013). More specifically, public stigma involves a person being labeled or stereotyped. Research on public stigmas related to PWS has shown that people often exhibit negative attitudes and feelings towards PWS. A study by Koutsodimitropoulos et al. (2015) found that many practicing clinicians and even SLP students were likely to attribute negative traits to hypothetical PWS. PWS are often believed to possess negative personality characteristics such as being introverted, shy, guarded, fearful, tense, and embarrassed (Boyle, 2013; Koutsodimitropoulos et al., 2015).

St. Louis et al. (2010) found that PWC are stereotyped and stigmatized as well. For example, survey respondents of the general public indicated that when presented with the term "cluttering", they thought of "messiness" (St. Louis, 1999; St. Louis et al., 2010). Research indicates that there is little public awareness about cluttering (St. Louis et al., 2011, 2010). This is due to SLPs having limited knowledge about cluttering, so SLPs can only share the

information that they know about cluttering. St. Louis et al. (2010) found that when people were given definitions of disorders, they were positively influenced and able to recognize and differentially label PWS and PWC. This study shows that, given some guidance about the definition of cluttering and stuttering, views of both disorders were positively influenced and better understood by the general public.

When SLPs have more exposure to people with fluency disorders their interactions become more positive, they will be able to more positively interact with their clients and better educate the public. This is because as SLPs' training increases their knowledge grows as well and when this occurs their interactions with clients are positively affected. Additionally, when people have more knowledge and experience with fluency disorders, they are likely to rate their personality traits more positively (St. Louis et al., 2014). St. Louis et al. (2014), showed that when SLP students receive more education and training, their attitudes and beliefs are likely to be more positive toward fluency disorders.

Stuttering

Stuttering, as defined by the Public Opinion Survey of Human Attributes-Stuttering (POSHA-S), is as follows: stuttering is a speech disorder when a speaker typically repeats or prolongs parts of words or gets stuck or blocked on words (St. Louis et al., 2014). This definition represents the overt characteristics that are presented during a moment of stuttering. The person who stutters can also experience a loss of voluntary control in saying certain words (St. Louis, Sønsterud, Carlo, Heitmann, & Kvenseth, 2014). Often PWS have secondary concomitant behaviors that appear physically or vocally (e.g. distracting sounds, facial grimaces, head movements, leg tapping, sound or word avoidance). However, not all PWS are aware of their secondary behaviors.

PWS are often subjected to negative stereotyping in part due to the connotations of the overt characteristics of stuttering. Additionally, negative attitudes and stigma placed on a person can impact their treatment process and their view of speech, behavior, and social identity (Koutsodimitropoulos et al., 2015). Negative attitudes suggest that a segment of society continues to show little or no understanding of the causes of stuttering.

Cluttering

Cluttering as defined by Public Opinion Survey of Human Attributes-Cluttering (POSHA-Cl), is a speech disorder in which a person's speech is either too fast, too jerky or both (St. Louis et al., 2014). While the POSHA definition is more of a descriptive definition, van Zaalen (2009) defines cluttering as when a person is not able to adjust their speech rate to the linguistic and motor demands of the moments. Similarly, Myers et al. (2012) define cluttering as a fluency disorder characterized by various symptoms such as poor speech intelligibility, a speaking rate perceived to be too fast or irregular, inappropriate prosody, as well as the presence of excessive disfluencies. Moments of fast/irregular speech is commonly accompanied by excessive normal disfluencies, excessive collapsing or deletion of syllables, abnormal pauses, syllable stress or speech rhythm (Myers et al., 2012; Santana, & de Oliveira, 2014). According to Zaalen and Reichel (2015) the main features of cluttering also include difficulty with word structure, speech pauses, disfluencies, melodic patterns, handwriting and writing problems, attention and concentration, auditory skills and planning difficulties.

When cluttering occurs with no other concomitant disorders, it can be referred to as pure cluttering. While pure cluttering can occur, it is common for PWC to also present with stuttering and characteristics similar to a phonological disorder, which can include deletion/collapsing of syllables and omission of word endings. Their speech sounds "cluttered", as though they do not

have a clear idea of what they want to say, and they are often not aware that they have a speech problem (St. Louis et al., 2014). This communication disorder is considered multidimensional and complex, because its features are integrated into multiple aspects of communication, including: speech rate, speech intelligibility, prosody, articulation, formulation of language and pragmatics (Myers et al., 2012; St. Louis, 1992).

Stuttering has agreed-upon characteristics and diagnostic criteria, such as blocks or stops, prolongations, repetitions (part word, syllable, and phrases), and interjections. Professional agreement regarding the characteristics of cluttering has yet to emerge. Common characteristics of cluttering are poor speech intelligibility, a speaking rate perceived to be too fast or irregular, inappropriate prosody, and the presence of excessive disfluencies. There is also inconsistency in research in determining a definition of cluttering. Cluttering commonly occurs with stuttering, and as a result, stuttering and cluttering have many overlapping features such as repetitions, prolongations, blocks, interjections, and revisions. Unlike stuttering, cluttering can also present with characteristics of a phonological disorder, which can impact the production of speech sounds and impact how speech sounds function within a language (ASHA, n.d). Those who clutter commonly present with deletion/collapsing of syllables (e.g. I want television is changed to Iwanwatevision) and omission of word endings (St. Louis et al., 2014). Another characteristic is prosody errors, which are errors related to stress, intensity, rhythm and intonation. It is estimated that 7.5% of children between 3-11 years old have a phonological disorder, meaning that SLPs have more experience with phonological disorders than cluttering (Almost & Rosenbaum, 1998). The limited and inconsistent research, as well as overlapping features, influences the SLPs' level of confidence.

St. Louis (1992) and Bakker (1996) observed that there is not a consensus on the definition of cluttering, and this has interfered with the research and the development of clinical procedures. There is speculation that cluttering is less prevalent than stuttering (St. Louis et al., 2019). St. Louis et al. (2010) and Daly (1996) speculated that approximately 2% of those with a fluency disorder are PWC. In comparison to stuttering, cluttering is a fluency disorder that is less common. Because of the low prevalence of cluttering, there remains a lack of research that leads to an inconsistency in the definition of cluttering. An overarching theme is that cluttering involves excessive breaks in the normal flow of speech that seem to result from disorganized speech planning, talking too fast, or spurts of fast speech (Yairi & Seery, 2015).

To understand this disorder's characteristics further analysis of the presented disorder must be done. Currently, there are no standardized, normed assessments for individuals who clutter; however, the provider may use the Predictive Cluttering Inventory (PCI) – revised, which uses a five-point scale that looks at speech motor abilities, language planning, attentiveness and motor planning. The speech motor section assesses pauses between words/phrases, repetition of multi-syllabic words/phrases, irregular speech rate, the presence of absence of condensed words, and whether speech rate progressively increased. Language planning determines the presence of disorganized language, poor language formulation, inappropriate topic introduction/maintenance, and variable prosody. The attentiveness portion measures ability to recognize or respond to listeners' visual feedback, repair or correct communication breakdowns, awareness of one's own communication errors, or distractibility or poor concentration. The motor planning component of the test determines the extent to which the person is clumsy and uncoordinated. In this case, writing can present with omissions or transpositions; individuals who clutter can be impulsive talkers and can have poor social communication skills.

To summarize, the characteristics that this study is going to focus on are that cluttering consists of breakdowns in speech clarity that occurs with perceived rapid/irregular speech rate and often is accompanied by deletion/collapsing of syllables (e.g. I want a television, changed to Iwanwatevision) and omission of word endings, similar to a phonological disorder (St. Louis, Raphael, Myers, & Bakker, 2003). Due to limitations in the definitions of cluttering and limitations in research, it is important to understand SLPs' knowledge and experiences regarding cluttering in comparison to other disorders, as fluency disorders is one of the many areas in which SLPs practice. SLPs' knowledge related to fluency disorders, specifically cluttering, is limited.

Speech-Language Pathologists' (SLP) training and experience

Speech Language Pathologists (SLPs) undergo substantive didactic and clinical education to develop and maintain competencies and best practices in assessing and treating people experiencing a wide array of communication disorders. Many SLPs reported stuttering as the least popular and most feared disorder to treat (Kelly, et al., 1997; Maviş, St. Louis, Özdemir, & Toğram, 2013; Yaruss, 1999; Yaruss & Quesal, 2002). It is hypothesized that the unpopularity of working with a person who stutters is due to lack of training, lack of adeptness, and marginal clinical success with previous clients (Cooper & Ciiper, 1996; Pellowski, 2010; Yaruss & Quesal, 2002). Few clinicians felt their education prepared them for working with PWS (Ruscello, Lass, French, & Channel, 1990). On average, students spend 7.8 hours assessing PWS, and 16.7 hours treating them during their graduate program (Yaruss & Quesal, 2002). Approximately 56% of graduate schools do not require treatment experience, and 59% reported it is not required for graduate students to have any experience with clients who have a fluency disorder (Yaruss, 1999). Graduate students who had the opportunity to partake in clinical

experience with those who stuttered identified this experience as an important part of their education (Ruscello, Lass, French, & Channel, 1990). Having a positive clinical experience while in graduate school allowed for students to integrate theory and practice while receiving feedback. Overall, many students felt unprepared to work with PWS; they felt ill-equipped to understand how to implement assessment and treatment, even after the completion of their graduate program (Koutsodimitropoulos et al., 2015).

Knowledge of stuttering among SLPs varies based on the resources and opportunities given both during graduate and postgraduate school. Approximately 20% of graduate school programs report it is possible for graduate students to complete their programs without taking a course or obtaining clinical experience in fluency disorders (Kelly et al., 2007). It is presumed that SLPs with a master's degree and clinical experience know how to approach assessment and treatment of all disorders within the scope of SLPs practice. The expectation is that SLPs are knowledgeable about fluency disorders; unfortunately, not all SLPs have completed a course on stuttering or received clinical experience. SLPs are the healthcare professionals most likely to diagnose and treat individuals with a fluency disorder; however, because fluency disorders affect a smaller percentage of the population, SLPs may be limited in their exposure to stuttering and other fluency disorders, which also, limits their clinical knowledge and experience. Additionally, over the years, students with a bachelor's and master's level degrees receive minimal coursework and clinical experience related to people who stutter (Kelly et al., 1997). As a result, there is apprehension to assess and treat PWS (Koutsodimitropoulos et al., 2015; Pellowski, 2010; Ruscello, Lass, French, & Channel, 1990; Yaruss & Quesal, 2002).

Although SLPs are the top treatment provider for cluttering, they continue to show apprehension in its assessment and treatment (Cooper & Ciiper, 1996; Kalinowski, Armson,

Stuart, & Lerman, 1993; Ruscello, Lass, French, & Channel, 1990; Zaalen & Reichel, 2015), which may be due to limited didactic training, limited exposure to clients with cluttering, (Farrell, Blanchet, & Tillery 2015) and limited research being conducted in this area. Zaalen and Reichel (2015) revealed that clinicians were familiar with the symptoms and the causes of cluttering, but they did not have a clear understanding of the differences and similarities between cluttering and stuttering. Within the 96% of programs that have a class for fluency disorders, minimal time within the course is spent on cluttering, relative to stuttering, due to the limited research and lack of consensus on its definition (Pellowski, 2010). “The average amount of minutes spent on cluttering instruction in these courses was 100 minutes, with a mode of 60 minutes” (Ward & Scott, 2011, p. 280). In addition, Ward and Scott (2011) found that of 20 textbooks dedicated to fluency disorders, six had one chapter specific to cluttering, whereas three briefly listed it under “related fluency disorders.”

This difficulty is not limited to the United States. SLPs in Bulgaria, Norway, Puerto Rico, Russia and Turkey have reported weak academic preparation, lack of clinical experience, and insufficient published information surrounding fluency disorders more broadly (Georgieva, 2001; St. Louis et al., 2010; St. Louis & Hinzman, 1986; Ward & Scott, 2011). For cluttering, clinicians did not consider themselves knowledgeable enough to identify symptoms, diagnose, or provide treatment, which they attributed to little preparation given to them in their academic careers (Ward & Scott, 2011).

In the classroom setting, cluttering is typically taught briefly within a fluency disorders class. This is hardly enough time or support for a student to feel comfortable with their knowledge of cluttering. As a result, SLPs do not feel comfortable with their ability to work with PWC, due to inadequate preparation and limited access to relevant publications. Previous

research has touched upon education standards for fluency disorders, but there has yet to be a comparison of practicing SLPs' training, knowledge and experience of stuttering, cluttering, and phonological disorders. The purpose of the research is to assess practicing speech-language pathologists' level of training, knowledge, and experience with cluttering and their ability to identify characteristics of cluttering as compared to both stuttering and phonological disorders, which both have some similar features to cluttering. We hypothesized that practicing Speech Language Pathologists (SLPs) will report a diminished training, knowledge, and experience of cluttering compared to stuttering, and phonological disorders. Our research questions include: What is the level of training, knowledge, and experience of practicing SLPs for cluttering, stuttering, and phonological disorders?, How accurate are SLPs at identifying characteristics of cluttering, stuttering, and phonological disorders when given diagnostic terms, and audiovisual samples?, and How are clinicians self-reported confidence, level in diagnosing, and assigning personality traits related?.

Methods

Participants

Participants were found using convenience sampling by recruiting potential respondents directly or indirectly from colleagues, friends, acquaintances, individuals known to the authors, state associations, or Idaho State University alumni. In this study there were 53 participants who started the survey. Of the 53 participants, 10 participants started the survey and completed a majority of the survey questions (e.g. five participants missed 1 question, two participants missed 2 questions, one participant missed 4 questions, one participant missed 5 questions and one participant missed 19 questions), 8 participants stopped once they saw the video portion of the

survey and 35 completed the entire survey. Each participant was ASHA certified and state licensed in their respective states among the Intermountain West region of the United States (i.e., Idaho, Montana, Washington, California, Oregon) for an average of 5.68 years ($SD = 6.18$, range = 0-36). The participants ranged in age from 24 to 62 years old ($M = 34.06$; $SD = 7.35$) and consisted of 50 females, 2 males and 1 person who chose not to disclose. Survey participants consisted of 52 master's level practitioners¹, and 1 doctoral-level SLP. In brief, participants have worked in an array of clinical settings. Table 1 summarizes where participants have practiced and where they primarily practice.

Materials

A 56-item questionnaire (shown in Appendix A) was developed and presented via Qualtrics Survey Software. Participation in this study was voluntary, anonymous and confidential. The presented survey collected information in the following categories: demographic information (e.g. age, gender, number of year employed as a certified SLP, highest degree obtained, area of clinical specialization, and place of primary employment), academic coursework, clinical practicum experience, program requirements, area of interest, caseload, clinical level of comfort, and ability to recognize characteristics of specific disorders (e.g. stuttering, phonological disorder and cluttering).

The study was approved by the Idaho State University Human Subjects Committee with an exempt classification due to the population consisting of typically developing adult speech language pathologists and students who may choose to (or not to) participate in the study. This survey was adapted to assess SLP's level of knowledge, accuracy, training and experience with stuttering and cluttering as compared to phonological disorders. Please see appendix A for the

¹ One of the participants completed the survey at the end of their clinical fellowship year, one week prior to receiving their ASHA certification.

survey. After the informed consent page, the questionnaire, began with demographic questions. Next, questions were asked related to academic coursework; specifically, if a fluency disorders course was offered at the graduate or undergraduate level. On a sliding scale, participants were asked how many hours were devoted to stuttering and cluttering in their fluency disorders course, and how many clinical hours in fluency disorders did they acquire in graduate school (i.e., assessment and treatment of stuttering, assessment and treatment of clutter). After this, participants were requested to provide ratings on five interval (Likert) scales for their area of interest within Speech Language Pathology, as determined by ASHA's scope of practice (American Speech-Language-Hearing Association, 2016). Again, a five-interval scale was utilized to find out the types of clients typically on caseload over the last year, ability to assess and treat disorders, and pursued CEUs in certain areas over the past 3 years. The disorders presented within these questions were based on ASHA portal clinic topics available (ASHA, 2018). Continuing the survey, participants were asked how many clients they have assessed or treated that stuttering or clutter. Following this, participants were requested to provide ratings on a five-point interval scale detailing their level of knowledge and experience with phonological disorders, stuttering and cluttering.

The next section, participants were presented with the diagnostic terms (i.e. phonological disorder, stuttering, cluttering) and asked to check characteristics they might see in someone who has the presented disorder. Survey preparation began by determining the characteristics of phonological disorders, stuttering and cluttering. The characteristics related to phonological disorders were determined based on the definition given on the ASHA website (Speech Sound Disorders: Articulation and Phonology). Cluttering characteristics were based on the least

common denominator definition by St. Louis, Raphael, Myers, & Bakker (2003). Stuttering characteristics were determined based on the article written by St. Louis et al. (2014).

Starting the final section participants were presented with stimulus videos of someone with one of the following disorders: stuttering, cluttering or a phonological disorder. Overall, six videos were utilized, each contained a monologue presentation and was edited to be 15 seconds in length. The videos were accrued from YouTube, a video sent in by a parent, and DVDs (Cummings, 2015; Scaler, 2018; Schneider & Schneider, n.d.; Scott, 2011). Following the video, participants were asked to identify the characteristics that apply to the speaker based on a given list of characteristics. The characteristics present in each video were agreed upon by two authors of this paper. For the exact list of characteristics for each video please refer to Table 2. Participants were asked to identify what disorder they had, if they were a typically fluent speaker, and personality traits of the speaker in the video. Then they rated how confident they were in the both the persons' marked characteristics and their clinical diagnosis in the video.

Survey Validation

This survey was drafted several times and based on previous research to allow for a comparison to be made from previous questions, while still collecting information that was lacking in previous surveys (shown in Appendix B). Before the full survey was launched, an author on the paper piloted the study with two graduate students who had completed the fluency disorders course required by Idaho State University. A pilot study was done to ensure that the questionnaire was accurate, thorough, and complete. Graduate students made comments throughout based on wording and suggestions to add additional questions; the author took the suggestions into consideration and made changes to the survey accordingly. To note, the two

graduate students mentioned being hesitant about completing the videos during the survey; they felt as if they were being tested.

Data Analysis

In the final two sections of the survey participants were presented with the diagnostic terms and stimuli videos. Six videos were utilized and each was edited to be 15 seconds in length. As seen in Strickland et al. (2019) a video length of 15 seconds is adequate time for a person to recognize the characteristics presented in the video. Following each diagnostic term and stimuli video a list of characteristics was presented. The lists included the correct term and foils. To analyze participants accuracy each characteristic was given a point value based on how often and how closely related the characteristics are seen with the presented disorders (i.e., characteristic seen often +2 pts, seen minimally +1 pt, somewhat wrong -1pt, very wrong -2 pts).

This study examined the descriptive statistics which are represented in the tables presented after the references. The tables will be primarily summarized after the results section. To begin, the data was initially examined with the Spearman correlational analyses. This allowed us to determine significant relationships between participants item responses to indicate possible grouping of the data into categories. Using the information obtained from the correlational analyses a factor analysis was then conducted to examine clustering of the data into categorical groups. Additionally, factor analyses were conducted to assess which survey items appear to group together for dimension reduction purposes. The eigen values from these factors were then used as predictor variables in a linear regression analysis to examine the combined items ability to predict accuracy of characteristics identification and observation. Given the disproportion between clinician knowledge with fluency disorders and phonological disorders groups were based on level of experience. These levels were the independent variables which we used to

separately assess for accuracy to determine if level of experience influences demonstrated knowledge.

Results

Graduate Level Academic Training and Clinical Experience

Table 3 illustrates the academic training requirements in the participants' undergraduate and graduate programs. For 94% of participants, they were required to complete a fluency class at the graduate level; 4% of participants were required to complete a fluency class at the undergraduate/graduate level, and 2% of participants found that a fluency course was optional at the undergraduate level but required at the graduate level.

Speech Language Pathology experience, typical caseload, and continuing education

In Table 4, participants were asked a series of questions related to the participants' area of interests, their typical caseload, their ability to assess and treat various disorders and their continuing education pursuits. Results from the table are broken down by each statement. These questions revealed that when participants asked about their area of interest 22 are somewhat interested in fluency disorders and 13 are not very interested or not at all interested in fluency disorders. While 25 participants are very interested in speech production. When participants were asked about the clients typically on their caseload 23 indicated that they sometimes worked with clients with a fluency disorder. While, 32 indicated that they very often had a speech sound disorder client on their caseload. The third question in this survey indicated that 22 participants felt that they were somewhat skilled to assess and treat someone with a fluency disorder. Unlike speech sounds disorders where 39 participants felt that they were skilled. The fourth questions

look at what CEUs they pursued over the last three years. Participants indicated that 19 never pursued fluency CEUs, but 13 participants pursued speech sound CEUs very often.

Client Experience

Table 5 illustrates the frequency with which SLPs have assessed and treated PWS and PWC. Additionally, within the survey, participants were asked to rate their level of knowledge and experience of phonological disorders, stuttering and cluttering on a Likert scale (i.e., extremely good, moderately good, slightly good, neither good nor bad, and slightly bad). Most participants rated level of knowledge of phonological disorders as extremely good (38%) or moderately good (40%). Thirty-six percent of the participants rated their level of experience with phonological disorders as extremely good, and 38% rated experience as moderately good. Many participated rated their knowledge of stuttering as moderately good (30%), while experience with stuttering was rated as moderately good by 26% of participants, or slightly bad by 28%. The majority of participants indicated that their level of knowledge of cluttering is slightly bad (47%). The majority of participants reported their level of experience with cluttering as slightly bad (61%).

Knowledge of Cluttering, Stuttering, and Phonological Disorders

Participants were presented with the disorder and asked to identify the characteristics that go with that disorder. Following these questions, participants were presented with six videos. Each of the videos were 15 seconds long and included either a person with a phonological disorder, a person who stuttered or a person who cluttered. After each video, the participants had to identify the appropriate characteristics present in each video. Results from these items can be found in Table 5. As can be seen in Table 5, participants on average assessed stuttering 11.77 hours (SD = 16.97) and treated stuttering 11.17 hours (SD = 14.8). Frequently participants were

likely to get 0-5 hours of stuttering assessment and treatment. This is unlike cluttering where participants assessed cluttering 1.79 hours (SD = 3.15) and treated cluttering 1.51 hours (SD = 3.07). Most participants received no assessment or treatment experience with clients who clutter.

Table 6 presents results from four questions related to each of the videos that were previously presented in the survey. These questions look at the respondent's ability to diagnose the person in the video, how confident they are when identifying the person's characteristics/ diagnosing them and what personality traits they believe this person has. As seen in Table 6, for video 1 and 3 all but a few participants correctly identified the individuals as a PWS although there was variability in their confidence of the diagnosis and identification of the marked characteristics. Participants rated the speakers within the videos as self-confident, capable and outgoing. The participants assigned stereotyping attributes to the PWS (i.e., nervous, shy, insecure). Within video 2 and 4, most participants correctly identified the individuals as a person with a phonological disorder. Most participants were confident in the clinical diagnosis and the identification of the marked characteristics. Participants marked the speakers as self-confident, capable and outgoing. Cluttering was represented in videos 5 and 6. Within these videos' participants most often believed the people were fluent speakers. They were often confident and somewhat confident in their diagnosis and the identification of the marked characteristics. Participants believed the speakers were nervous, self-confident, capable and outgoing.

Correlational Analyses

Table 7 presents results which indicated that predictor variables were significantly correlated with at least one of the variables of interest. Findings indicate that the higher participants rated their ability to assess and treat fluency disorders, they were more likely to have spent time in graduate school treating stuttering ($p < 0.0513$) and likely to have marked fluency

as an area of interest ($p < 0.0001$). Additionally, when participants had more experience with stuttering, they were likely to have higher level of knowledge of stuttering ($p < 0.0001$). There was a strong correlation between participants who perused CEUs as they were likely to have an area of interest in fluency disorders ($p < 0.0001$), have fluency clients on their caseload ($p < 0.003$) and have rated their ability to assess/treat fluency disorders as higher ($p < 0.003$). Additionally, participants who had experience treating stuttering often had more hours in graduate school assessing stuttering ($p < 0.0022$), reporting an area of interest in fluency disorders ($p < 0.0009$), had more fluency clients on their caseload ($p < 0.001$), and had a greater ability to assess and treat fluency disorders ($p < 0.0001$). When participants do have more clients on their caseload who stutter, the more participants report an interest in fluency disorders ($p < 0.0045$) and the more they seek out continuing education in fluency disorders ($p < 0.003$). This did not hold true to cluttering. There was no correlation between the number of clients on a person's caseload who clutter and their likelihood of reporting an interest in cluttering ($p < 0.0868$) and pursuing continuing education in fluency disorders ($p < 0.1236$).

Factor analyses Fluency

As a means of item reduction, the items related to fluency disorders were analyzed with a factor analyses using maximum likelihood with a varimax rotation to identify factors. Examining eigen values and the scree plot a 3-factor model was determined to be the most parsimonious fit. The three resulting factors accounted for 76% of the variance. This model as significant ($\chi^2(28)=346.8, p<0.0001$). The cutoff for factor membership was set at .35. When doing the factor analysis for fluency three factors were identified factor one interest in fluency was contributed to by experience with clients who stutter and factor two was experience with clients who clutter. As shown in Table 8, questions one through four all loaded on the “interest in

fluency disorders” factor. Questions five and six loaded on the experience with fluency disorders factor, while the final two questions loaded on the cluttering factor. These loadings were strong (0.61 to 0.97), implying clear differentiation of responses.

Three factor scores were calculated using the loadings. These factor scores were used in the following multiple regressions to determine the degree to which the experience category predicted the accuracy. The factors examined the relationship with knowledge and performance outcomes. The scale was designed so that greater interest in fluency was represented as a lower score. For the experience scales a higher score represents more experience. Knowledge predicted by fluency disorder in Table 9 found that there was a significant difference revealed by the linear regression analysis when comparing the factor values to the hits when participants were presented the diagnostic term cluttering. Videos predicted by fluency factors in Table 10 found that there were significant differences revealed by the linear regression analysis when comparing the factor values to hits within the videos of cluttering and the total for video three of cluttering.

Factor analyses Phonological

As a means of item reduction, the items related to fluency disorders were analyzed with a factor analyses using maximum likelihood with a varimax rotation to identify factors. Examining eigen values and the scree plot a 2-factor model was determined to be the most parsimonious fit. The two resulting factors accounted for 62% of the variance. This model as significant ($\chi^2(15)=163.4, p<0.0001$). The cutoff for factor membership was set at .35.

Factor loadings for phonological variables can be found in Table 11. Questions one through three all loaded on factor one. While questions four and five loaded onto factor two. These loadings were strong (0.52 to 0.96) this implies clear differentiation of responses. Within

Table 12 two factor scores were calculated using the loadings. These factor scores were used in the regressions to examine their ability to predict knowledge and performance. There was statistical significance in participants ability to identify characteristics when given the diagnostic term. Phonological performance predicted by phonological factors in Table 13 found that there were no significant differences were revealed by the linear regression analysis when comparing the factor values to hits, misses and foils by the observed characteristics within the videos of phonological disorders.

Discussion

The purpose of the current pilot study was to examine SLPs' knowledge, accuracy, training, and experience with both stuttering and cluttering as compared to more common phonological disorders. The major findings have been put under multiple categories. The authors understand that the categories present overlapping information, however, it makes sense to sequentially present the findings under three categories; training, knowledge and experience.

Training

Results indicated that of the 53 participants in this study 89% were required to complete clinical hours in fluency disorders. In Yaruss (2017), the surveyed respondents were from undergraduate and graduate institutions in the United States. Of all the participants in the Yaruss study, 52% reported that clinical hours in the assessment of fluency disorders was required and 45% of participants indicated that treatment of fluency disorders was required in their graduate program. These results differed from the current study; however, the current study has a lower sample size and most of our participants practice in Idaho. The need for required clinical hours is evident since after completing graduate school, students reported still feeling unprepared to work

with PWS and implement assessment and treatment (Koutsodimitropoulos et al., 2015). Similar to Yaruss (2017), knowledge related to stuttering varies based on the resources and opportunities that are given during school.

As seen in Table 2, on average, participants in this study completed 6.32 (SD = 10.06) hours assessing stuttering and 13.49 (SD = 14.51) hours treating stuttering in graduate school. This is similar to previous research as Yaruss & Quesal (2002) found that on average students spend 7.8 hours assessing stuttering and 16.7 hours treating stuttering during their graduate program. As seen in Table 2, the level of knowledge of SLPs in fluency disorders is markedly less than that of phonological disorders. Those who had the opportunity in graduate school to take part in clinical experience identified this experience as an important part of their education (Ruscello, Lass, French, & Channel, 1990). Providing graduate clinicians with positive clinical opportunities will increase their ability to integrate theory and practice while receiving feedback.

A magnified disparity is clearly evidence as the current study found that participants completed an average of 0.64 (SD = 1.2) hours in cluttering assessment, with 48 participants having completed 0 hours. Additionally, participants completed, on average, 0.81 (SD= 3.08) hours in cluttering treatment with 46 participants having completed 0 hours. To the best of the authors knowledge past studies have yet to examine or report on student training or clinical aspects for cluttering. Results indicated in Table 7 show that there is a significant correlation between hours spent in graduate school assessing cluttering and treating stuttering because most PWC also stutter. Additionally, the higher participants rated their ability to assess and treat fluency disorders, they were more likely to have spent time in graduate school treating stuttering ($p < 0.2513$) and likely to have marked fluency as an area of interest ($p < 0.0001$). Again, the presented data is foundational to this area of research as it has not been investigated before.

Results indicated that 94% of participants were required to complete a fluency disorders course at the graduate level. This is much higher than what was presented in Kelly et al. (2007) as they found that 20% of participants could complete their graduate programs without taking a course or obtaining clinical experience in fluency disorders. The difference in requirements can be attributed to sample size and location. In the end, ASHA program accreditation standards assume that SLPs with a master's degree are knowledgeable, have clinical experience, and know how to approach assessment and treatment of all disorders. As evidenced by this study this is not true. Unfortunately, not all SLPs have completed a course on stuttering or received clinical experience. Over the years, students receive minimal coursework and clinical experience in fluency disorders (Kelly et al., 1997). As a result, there is apprehension when SLPs are asked to assess and treat PWS (Koutsodimitropoulos et al., 2015; Pellowski, 2010; Ruscello, Lass, French, & Channel, 1990; Yaruss & Quesal, 2002). Additionally, there are fewer resources and less time spent on cluttering without having received adequate education and experience. It is difficult for professionals to have a good foundation of understanding cluttering. This was evident as participants indicated that on average 5.77 hours ($SD=4.21$) are spent in class covering cluttering/ other fluency disorders. Four participants noted that they spent 0 hours covering cluttering/ other fluency disorders. There is minimal to no time being spent on cluttering, relative to stuttering, due to the limited research and lack of consensus on its definitions (Pellowski, 2010). Many clinicians revealed they were familiar with the symptoms and the causes of cluttering, but they did not have a clear understanding of the differences and similarities between cluttering and stuttering (Zaalen & Reichel, 2015). This is due to cluttering in the classroom being taught minimally. Often, cluttering is taught an average of 100 minutes, with a mode of 60 minutes within a fluency disorders course (Ward & Scott, 2011).

It is a consistent trend in the data that those who received more assessment and treatment hours for stuttering and cluttering had a better understanding of what characteristics are presented in both disorders. In terms of hours spent in class covering stuttering and cluttering, the four participants who received 0 time on cluttering were able to identify the lowest number of correct characteristics. However, when it came to class time, performance varied for those who received more hours devoted to stuttering. SLPs are supposed to be the top treatment providers of cluttering, but many participants had didactic limited training and exposure to clients who clutter (Farrell, Blanchet, & Tillery 2015). Overall, it is evident that SLPs' training is not preparing them to work with PWC.

Knowledge

To the best of our knowledge, past research has not examined clinician knowledge or accuracy at identifying characteristics of either stuttering or cluttering, nor have possible predictor variables been examined in this regard. Factor analyses did reveal item groupings of experience and knowledge. For example, in Table 7, when participants had more experience with stuttering, they were likely to have higher level of knowledge of stuttering ($p < 0.0001$). Factor values were then used as predictor variables to assess level of accuracy by hierarchical experience category, which did not reveal significant differences. Participants' level of knowledge was not correlated with hours in graduate spent assessing and treating cluttering. When participants rated their level of knowledge and experience with cluttering as high, they were more likely to: have an area of interest in fluency disorders, have fluency clients on their caseload, pursue CEUs in fluency, and have more experience with clients assessing/treating stuttering and cluttering.

To assess survey participants' knowledge, they were asked to identify the disorder's characteristics when given the diagnostic term. This information can be found in Table 5. When presented with the term cluttering, participants who reported having more clinical experience were no more accurate than those who had little clinical experience with cluttering. Similar information was found in Scaler et al. (2009) and St. Louis et al. (2010). In these surveys SLPs stated that they had some experience with cluttering but they were still unsure what characteristics are presented with a person who clutters versus a person who stutters (Scaler et al., 2009; St. Louis et al., 2010). This comes down to lack of clinician training and experience for fluency disorders. A magnified disparity is further evident for cluttering given a number of factors, but most related to limited experience, instruction, resources, courses and training (Ward & Scott, 2011; Scaler et al., 2009).

More specifically, in Table 5 when participants were presented with the diagnostic term phonological disorder, 92% of participants missed prosody errors as this is not a common characteristic seen with a phonological disorder. Some foils presented were selected frequently (i.e., sound or word avoidance, fast and/or irregular speech rate, word structure, handwriting/writing problems), as these characteristics can be seen in people with phonological disorders but they are not characteristics that are present in the definition (ASHA, n.d.). When presented with the term phonological disorder, appropriate characteristics were consistently marked correct as phonological disorders are more common than fluency disorders (Almost & Rosenbaum, 1998).

When presented with the diagnostic terms stuttering and cluttering, participants often picked the foils that were available. This is due to the fact that stuttering and cluttering are disorders that often occur together (Zaalen & Reichel, 2015). Additional foils were chosen for

stuttering (i.e., fast and/or irregular speech, prosody errors, intelligibility, whole words/syllable errors, distortions, speech pauses) since characteristics that are not present in the ASHA definition can be seen in PWS. When participants were given the diagnostic term stuttering participant accuracy was high (91 – 100%). The exception to this is planning difficulties, which occurs less often (Manning, & DiLollo, 2018). When the term cluttering was presented several foils were chosen as these characteristics (i.e., use of interjection or filler words) can appear in PWC but they are not included in the least common denominator definition (St. Louis, Raphael, Myers, & Bakker, 2003). Additionally, some foils were chosen as they are often seen in people with a phonological disorder but can sometimes be present in PWC (i.e., distortions, additions, substitutions, omissions/ deletion (Zaalen & Reichel, 2015). Similar to Scaler et al. (2009), fast and/or irregular speech rate was picked most frequently as this is a hallmark characteristic of cluttering. However, many of the primary characteristics were identifiable and the lesser known characteristics were often missed (Scaler et al., 2009).

Participants were then presented with stimulus videos of someone who either stuttered, cluttered or had a phonological disorder. The first and third video in the survey were of a person who stutters. Some foils were chosen since they can be frequently seen in a person who stutters (i.e., fast and/or irregular speech rate, speech pauses, monosyllabic whole word repetitions) but they were not present in these videos (Manning, & DiLollo, 2018). An additional foil was chosen by 8% of participants in the third video as attention and concentration are characteristics often seen in PWC and stutter (Zaalen & Reichel, 2015). Several characteristics were inconsistently marked in these videos since they were minimally present (i.e., monosyllabic whole-word repetitions, extremity movements). As the characteristics became more prominent, accuracy

increased. This is evident in the first video as part word or sound/syllable repetitions was accurately chosen by 70% of participants and this was a very prominent characteristic.

Within the second and fourth video participants were presented a person with a phonological disorder. The characteristics were consistently marked correct as phonological disorders are more common than fluency disorders (Almost & Rosenbaum, 1998). However, within both videos' participants chose foils that are often associated with fluency disorders. This is seen in the second video as whole words/syllable errors was chosen by 47% of participants. Within the fourth video the foil part word or sound/syllable repetitions was selected by 34% of participants. As evident within the video the child appears to be determining how to best produce a specific sound, so she repeated a sound, but this is not considered a stuttering like disfluency as there was no physical tension during this production. Many people mistook that as she was a person who stutters.

The last two videos are of a person who clutters. Characteristics often seen in stuttering and phonological disorders were chosen as they are often seen with cluttering (St. Louis, Raphael, Myers, & Bakker, 2003; Zaalen & Reichel, 2015). In the fifth video a foil, use of interjection or filler words, was picked by 26% participants as this is a characteristic seen in PWC but it was not included in the least common denominator definition (St. Louis, Raphael, Myers, & Bakker, 2003). Mild characteristics of cluttering were presented in the sixth video and they were inconsistently marked (e.g. fast and/or irregular speech rate, prosody, attention and concentration, planning difficulties, and speech pauses). However, many characteristics were missed in both videos. This is due to the lack of consensus on the definition of cluttering, minimal research, limited research and lack of training available (Pellowski, 2010; Ward & Scott, 2011).

Following each video, participants were asked to pick personality traits for each person presented in the video (Table 6). The personality traits that were deemed to be “negative” personality traits in the study were incompetence, nervous, shy and insecure. These traits were more likely to be applied towards PWS than the other presented disorders (Blanchet, Farrell, and Snyder, 2017). In this study PWC were more likely to be rated as self-confident and capable. The perception of PWC’s personality traits differs from what was presented in St. Louis et al. (2014), since PWC were often viewed as less positive.

Additionally, participants were asked to rate their confidence in the identification of the disorders’ characteristics and the ability to diagnose the person with a disorder. Often, participants were confident in their ability to diagnose the disorder but were less confident in the identification of the characteristics. This is interesting because, given that diagnostics in SLP primarily consist of behavioral observations of characteristics or symptoms, a practitioner must be able to identify these characteristics in order to make an accurate diagnosis (Manning, & DiLollo, 2018; Scaler et al., 2009).

SLPs’ knowledge about cluttering and stuttering are inconsistent as many had difficulty identifying the appropriate characteristics within the presented disorders. The inconsistencies when presented with diagnostic terms or video are evident of the need for increased education in this area. This can be done by encouraging more training and experience with fluency disorders, specifically cluttering.

Experience

Fluency disorders affects a small percentage of the population, and SLPs may be limited in their exposure due to their primary place of practice, area of specialization and typical caseload (ASHA, 2011; Guitar & Conture, 2006; Yairi & Ambrose, 2013). As seen in Table 1, a

majority of the participants practice in schools (32%), private practice (32%), hospitals (13%) and health care facilities (67.9%). The current respondents vary slightly from the norm-referenced populations according to the ASHA supply and demand resource page. The percentage of ASHA-certified SLPs in schools and health care facilities are as follows in the year 2017: schools are 51.4%, hospitals are 12.5%, and all healthcare facilities are 39.3%.

Within Table 3, many participants indicated that they were very interested in speech production (47%) while few were very interested in fluency (17%) (Table 3). This is unfortunate as SLPs are the top treatment providers for people with fluency disorders, but they continue to show apprehension in their ability to assess and treat fluency disorders (Cooper & Cooper, 1996; Kalinowski, Armson, Stuart, & Lerman, 1993; Ruscello, Lass, French, & Channel, 1990; Zaalen & Reichel, 2015).

Participants discussed the typical clients on their caseload, their ability to assess and treat clients, and the CEUs they have pursued (Table 3). In this study there was a strong correlation between participants who perused CEUs as they were likely to have an area of interest in fluency disorders ($p < 0.0001$), have fluency clients on their caseload ($p < 0.003$) and have rated their ability to assess/treat fluency disorders as higher ($p < 0.003$) (Table 7). Additionally, participants who had experience treating stuttering often had more hours in graduate school treating stuttering ($p < 0.0022$), reporting an area of interest in fluency disorders ($p < 0.0009$), had more fluency clients on their caseload ($p < 0.001$), and had a greater ability to assess and treat fluency disorders ($p < 0.0001$). As seen in Table 7, when participants assessed PWC, they were less likely to seek out CEUs in fluency disorders ($p < 0.1236$) and they do not necessarily have an area of interest in fluency disorders ($p < 0.868$). When participants rated their level of knowledge and experience with stuttering as higher, they were more likely to: pursue CEUs in fluency, have

an area of interest in fluency disorders, and have more experience with assessing/ treating cluttering and stuttering.

As seen in the ASHA store, there were only 14 continuing education courses on fluency disorders offered as compared to the 48 speech sound disorder courses. Of the 14 courses that were available, three just had sections that discussed cluttering. Cluttering is also under represented within the national stuttering association (NSA) and the stuttering foundation. Both of these organizations provide resources, services and support to people with fluency disorders. Additionally, Fluency Bank is a shared database that provides monologue examples of stuttering and cluttering. Unfortunately, cluttering is again under represented with only two videos while stuttering has twenty-seven videos. The quality and frequency in which cluttering is taught in continuing education needs to be improved. Having few classes where practicing SLPs can gain knowledge on a disorder that many have difficulty accurately diagnosing, describing, and treating is important. (Georgieva, 2000; Simonska, 2006). The frequency in which courses are offered may be affecting participants' ability to pursue CEUs in fluency disorders.

Evidence of SLP experience with stuttering and cluttering is minimal, as revealed within this study. The average number of clients that participants assessed who stuttered was 11.77 and treatment was 11.17. Average by year for assessment of stuttering was 4.07 (SD = 8.64) and treatment was 4.29 (SD = 7.85). These averages appear to be similar to Briley (2018) that found that, for SLPs in schools, their caseloads ranged from 0 to 10 PWS (M = 2.2, SD = 1.6). On the contrary, the average number of clients who clutter seen by participants was 1.79 for assessment and 1.51 for treatment. On average per year, SLPs assessed 0.765 (SD = 2.28) clients per year, and treated 0.7 (SD = 2.34) clients who cluttered per year. Of the 53 participants in this study only 29 participants have assessed a person who clutters and 30 have never treated a person who

clutters. However, when participants do have more clients on their caseload who stutter, the more participants report an interest in fluency disorders ($p < 0.0045$) and the more they seek out continuing education in fluency disorders ($p < 0.003$). This did not hold true to cluttering. There was no correlation between the number of clients on a person's caseload who clutter and their likelihood of reporting an interest in cluttering ($p < 0.0868$) and pursuing continuing education in fluency disorders ($p < 0.1236$). In the end, clinicians with markedly greater experience with stuttering and cluttering were not significantly better at identifying characteristics or observed features for stuttering or cluttering. Which leads to the question of inclusive diagnostic definitions for stuttering and cluttering, level of clinician knowledge for fluency disorders, and training practices.

Limitations and Future Research

There are limitations to consider in this study. The data were obtained from samples of convenience and may not be representative of the various populations of practicing SLPs. The terminology utilized in this study to describe the characteristics of the disorder was vague, as many of these disorders have overlapping features. An example of this is when presented with the term "phonological disorder" many participants missed marking whole words/syllable errors and additions as this may have been a misinterpretation of what this term meant. Additionally, when presented with the term "stuttering," disfluencies were meant to be a FOIL as the term was supposed to refer to normal non-disfluencies. Another characteristic that was present was "intelligibility." Participants noted that they were confused if that meant poor intelligibility and as a result that term was often missed. When presented with the term "cluttering," participants often selected distracting sounds frequently because distracting sounds could be interpreted as

filler words. Changing the word of the mentioned characteristics will help clarify any confusion in the future.

Additionally, when participants were presented with the diagnostic term the phrasing of the question was unclear as a result participant could list all characteristics related to the specific disorder that may exceed the least common denominator definition. Also, participants were asked about their clinical experience with stuttering/cluttering but fewer questions about clinical experience were asked about phonological disorders. In future research, to be able to make more of a direct connection, it would be important to include additional questions. These questions should ask about how many clinical hours did they receive in graduate school assessing/treating phonological disorders and how many clients have they assessed/treated in their clinical practice with phonological disorders. Asking the same questions across all three disorders will allow for a more direct comparison of the results in the future.

For future research, clarifying the characteristics of each of the disorders and adding paralleling phonological disorders questions to the survey will be vital., as well as reducing the number of questions that are asked on this survey. Additionally, it would be ideal to expand the participant pool to the entire United States to get the bigger picture of practicing speech-language pathologists' level of training, knowledge, and experience with cluttering and their ability to identify characteristics of cluttering as compared to both stuttering and phonological disorders.

Clinical Implications

The findings in this study have potential implications for training programs in speech language pathology. Specifically, clients with fluency disorders should be able to work with an SLP who is trained, knowledgeable and experienced. This study brought insight into the need for

required clinical hours regarding fluency disorders. This is evident as those who took part in a clinical experience during graduate school identified this as an important part of their education. (Ruscello, Lass, French, & Channel, 1990). Cluttering is taught minimally in the classroom, this is apparent as many clinicians did not have a clear understanding of the differences and similarities between cluttering and stuttering (Zaalen & Reichel, 2015). SLPs' inconsistent knowledge about cluttering and stuttering is further evidence of the need for increased education in this area. This can be done by encouraging more training and experience with fluency disorders, specifically cluttering. In the end, clinicians with exponentially more experience with stuttering and cluttering were not significantly better at identifying characteristics or observed features for stuttering or cluttering. Which leads to the question of inclusive diagnostic definitions for stuttering and cluttering, level of clinician knowledge for fluency disorders, and training practices. It is evident that SLPs' need increased training because what is available now is not preparing them to work with PWC.

Conclusion

Findings from this research provide important information about the knowledge and experience clinicians are receiving in relation to cluttering. This pilot study has ideally shed light onto the need for a solidified definition of cluttering. As a result, more education, required coursework, and training are needed so that clinicians can effectively assess and treat clients who clutter. Future research should focus on the effects of graduate level coursework in fluency disorders, the importance of CEUs in cluttering and improving the amount/quality of cluttering CEUs available. The findings of this study indicate that many practicing speech language pathologists do not have enough training, knowledge or experience with cluttering to be able to

accurately identify characteristics of cluttering compared to stuttering and phonological disorders.

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Table 1***Participants Place of Practice***

	Where have you practiced?		Where do you primarily practiced?
Hospital	22	Acute Care	1
School	40	Hospital	3
Skilled Nursing Facility (SNF)	18	Hospital, School	1
Acute Care	8	Hospital, SNF	1
Private Practice	38	Hospital, SNF, Acute Care	1
Other	16	Hospital, SNF, Home Health	1
		Other	1
		Early Intervention	1
		Home Health	2
		Outpatient	1
		Outpatient for Peds and Adults	1
		Private Practice	15
		School	15
		School, Private Practice	2
		SNF	4
		SNF, Home Health	1

Note. The table describes self-reported primary practice location and additional practice locations when appropriate.

Table 2***Identification of stuttering, cluttering, and phonological disorders characteristics***

	Term: Phonological Disorder	Term: Stuttering	Term: Cluttering	Video 1	Video 2	Video 3	Video 4	Video 5	Video 6
Use of interjection or filler words (C/S)	2	*52	*32	*3	5	*25	1	14	19
Word produced with physical tension (S)	1	*53	10	*20	0	*37	2	2	0
Head movements (S)	1	*51	9	*18	5	*32	9	7	7
Distracting sounds (S)	5	*40	16	5	5	*23	2	2	6
Facial grimaces (S)	1	*53	8	9	0	*38	4	2	0
Extremity movements (S)	1	*51	7	3	1	*1	8	3	5
Sound or word avoidance (S)	17	*53	7	0	0	12	0	2	0

Audible or silent blocking (S)	1	*52	6	*15	2	*32	2	2	1
Fast and/or irregular speech rate (C)	8	29	*47	4	18	6	9	*7	*3
Word structure (C)	21	4	*14	1	10	2	3	1	1
Prolongat ions of sounds (S)	3	*52	8	23	1	*24	9	0	1
Speech pauses (C)	3	52	*16	24	4	21	4	*7	*11
Part word or sound/syll able repetition s (S)	2	*50	12	*37	5	*34	18	1	4
Disfluenc ies (C)	1	53	*24	33	11	29	10	2	2
Monosyll abic whole- word repetition s (S)	2	*48	10	*5	4	*14	2	0	2
Prosody errors	*4	29	*28	4	5	6	7	*1	*0

(P/C)									
Intelligibility (P/C)	*48	21	*24	0	*41	8	*22	6	4
Whole words/syllable errors (P)	*32	23	14	5	25	8	6	1	3
Distortions (P)	*41	6	8	1	*17	6	*14	7	16
Handwriting/writing problems (C)	19	4	*15	0	0	1	0	0	0
Attention and concentration (C)	8	10	*26	1	2	4	5	*0	*8
Planning difficulties (C)	8	20	*27	0	5	3	2	3	*7
Additions (P)	*32	15	10	1	6	2	3	1	0
Substitutions (P)	*47	11	7	0	*30	2	*24	5	6
Omissions/deletions (P)	*49	8	12	0	*27	0	*13	0	0

Note. Characteristics presented were obtained from the ASHA website (Speech Sound Disorders: Articulation and Phonology), St. Louis, Raphael, Myers, & Bakker (2003) and St. Louis et al. (2014). Columns 2 through 4 presents frequency of participants identified characteristics after

presented the disorder term. Columns 5 through ten presents participants identified characteristics observed from the video presentations.

P: Characteristic of Phonological Disorders, C: Characteristics of Cluttering, S: Characteristics of Stuttering, *: Correct characteristics.

Table 3***Graduate Level Academic Training and Clinical Experience***

	Required at the Graduate Level	Required at the Undergraduate and Graduate Level	Optional at the Undergraduate level/ Required at the Graduate Level
Was a course in fluency disorder offered during your program?	50	2	1
	Mean (SD)	Category Frequency	
Approximately how many hours were spent in class covering stuttering?	37.22 (6.81)	17-30: 13 35-39: 9 40:12 41-46: 19	
Approximately how many hours were spent in class covering Cluttering/ Other Fluency disorders?	5.77 (4.21)	0: 4 1-3: 11 5: 14 6-10: 24	
Did your program require you to complete clinical hours in fluency disorders?	Mean (SD)	Categories of Frequency	
Assessment of Stuttering	6.32 (10.06)	0: 9 1-5: 30 6-10: 9 11-50: 5	
Treatment of Stuttering	13.49 (14.51)	0: 6 1-4: 6 5: 7 6-10: 17 11-50: 17	
Assessment of Cluttering	0.64 (1.2)	0 48 2-10: 5	
Treatment of Cluttering	0.81 (3.08)	0: 46 1-4: 5 10-20: 2	

Note. The table describes SLPs fluency disorder course information and the clinical hours required during their graduate program.

All responses from the survey were not included as every option wasn't used.

Table 4***SLP experience, typical caseload and continuing education***

Indicate your area(s) of interest within Speech Language Pathology:					
	Very Interested	Somewhat Interested	Neutral	Not Very Interested/ Not at all Interested	
Fluency	9	22	7	13	
Speech Production	25	20	4	2	
Language	34	13	4	1	
Cognition	19	17	10	6	
Voice	6	18	12	15	
Resonance	1	15	19	16	
Feeding and Swallowing	22	17	3	10	
Auditory Habilitation/ Rehabilitation	6	14	17	35	
Over the last year indicate the types of clients typically on your caseload:					
	Very Often	Often	Sometimes	Seldom	Never
Acquired Apraxia of Speech	0	6	8	14	25
Aphasia	4	8	6	5	29
Apraxia of Speech	2	11	16	15	8
Augmentative and Alternative Communication (AAC)	8	10	19	14	1
Autism Spectrum Disorder (ASD)	28	6	10	5	4
Cleft Lip and Palate	2	4	7	17	20
Cochlear Implants	4	1	7	15	24
Dementia	12	3	2	3	33
Dysarthria	4	7	6	11	24

Feed and Swallowing	16	4	7	11	13
Fluency Disorder	3	2	23	16	8
Late Language Emergence	18	15	9	2	8
Orofacial Myofunctional Disorder	2	9	12	10	18
Resonance Disorder	1	2	9	20	20
Right Hemisphere Damage	1	6	10	4	32
Social Communication Disorder	17	16	10	4	5
Speech Sound Disorder: Articulation and Phonology	32	10	4	5	2
Traumatic Brain Injury	3	12	8	10	18
Voice Disorder	1	8	5	20	18
Written Language	3	8	18	11	12

What is your ability to asses and treat clients with the following disorders?

	Skilled	Somewhat Skilled	Neither Skilled or Unskilled	Somewhat Unskilled	Unskilled
Acquired Apraxia of Speech	6	17	15	8	6
Aphasia	13	13	5	16	5
Apraxia of Speech	14	22	11	1	3
Augmentative and Alternative Communication (AAC)	12	22	14	3	1
Autism Spectrum Disorder (ASD)	24	20	2	3	1
Cleft Lip and Palate	2	12	11	16	10
Cochlear Implants	5	8	8	17	13
Dementia	14	6	4	15	13
Dysarthria	10	10	8	14	10
Feed and Swallowing	15	20	6	6	6

Fluency Disorder	10	22	7	8	6
Late Language Emergence	26	13	9	1	4
Orofacial Myofunctional Disorder	6	10	10	7	17
Resonance Disorder	2	3	14	13	19
Right Hemisphere Damage	2	13	10	9	17
Social Communication Disorder	20	23	4	1	5
Speech Sound Disorder: Articulation and Phonology	39	11	0	0	2
Traumatic Brain Injury	7	15	11	10	10
Voice Disorder	6	11	11	15	10
Written Language	3	22	13	8	7

I have pursued CEUs in these areas over the past 3 years:

	Frequently	Very Often	Sometimes	Rarely	Never
Acquired Apraxia of Speech	3	2	8	7	32
Aphasia	4	7	4	8	30
Apraxia of Speech					
Augmentative and Alternative Communication (AAC)	8	9	14	8	14
Autism Spectrum Disorder (ASD)	11	10	18	5	9
Cleft Lip and Palate	2	2	8	22	29
Cochlear Implants	3	0	6	13	30
Dementia	6	4	7	5	31
Dysarthria	5	4	3	13	27
Feed and Swallowing	17	4	13	5	14
Fluency Disorder	3	4	16	9	19

Late Language Emergence	5	15	16	7	10
Orofacial Myofunctional Disorder	3	2	12	10	26
Resonance Disorder	0	3	8	9	33
Right Hemisphere Damage	0	3	8	9	31
Social Communication Disorder	10	8	17	10	7
Speech Sound Disorder: Articulation and Phonology	12	13	11	8	9
Traumatic Brain Injury	6	7	7	5	28
Voice Disorder	4	3	9	8	29
Written Language	1	5	14	12	21

Note. The table describes participants area of interest, their typical caseload, their ability to assess and treat clients, and what CEUs they have pursued over the last 3 years.

Table 5***SLPs' Client Experience***

Approximately how many clients who stutter or clutter have you assessed or treated?		
	Mean (Standard Deviation)	Frequency Categories
Assessment of Stuttering	11.77 (16.87)	0-5: 28 6-10: 11 12-29: 9 30-100: 5
Treatment of Stuttering	11.17 (14.8)	0-5: 23 6-10: 15 12-26: 12 30-100: 3
Assessment of Cluttering	1.79 (3.15)	0: 29 1-5: 19 6-15: 5
Treatment of Cluttering	1.51 (3.07)	0: 30 1-5: 19 9-16: 4

Notes. This table describes the number of clients that SLPs have assessed/ treated for clients who stutter and clients who clutter.

Table 6

Level of confidence, knowledge and perception related to stuttering, cluttering and phonological disorders

They are:	Number of respondents	Confidence in the marked characteristics	Number of respondents	Confidence in clinical diagnosis	Number of respondents	Personality traits of the speaker:	Number of respondents
Video 1, Person who Stutters							
PWS	43	Very Confident	7	Very Confident	7	Nervous	3
Phonological Disorders	0	Confident	17	Confident	22	Self-confident	35
PWC	1	Somewhat Confident	16	Somewhat Confident	12	Capable	34
Fluent Speaker	0	Less Confident	3	Less Confident	2	Incompetent	0
		No Confidence	1	No Confidence	1	Insecure	2
						Outgoing	19
						Shy	1
Video 2, Person with a Phonological Disorder							
PWS	1	Very Confident	6	Very Confident	7	Nervous	1
Phonological disorder	33	Confident	20	Confident	19	Self-confident	34
PWC	9	Somewhat Confident	13	Somewhat Confident	10	Capable	22
Fluent	1	Less Confident	3	Less Confident	7	Incompetent	1

speake
r

No Confidence	2	No Confidence	1	Insecure	0
				Outgoing	34
				Shy	1

Video 3, Person who Stutters

PWS	39	Very Confident	4	Very Confident	6	Nervous	19
Phonol ogical disorde r	0	Confident	19	Confident	18	Self-confident	12
PWC	2	Somewhat Confident	15	Somewhat Confident	14	Capable	25
Fluent speake r	0	Less Confident	2	Less Confident	2	Incompetent	0
		No Confidence	1	No Confidence	1	Insecure	9
						Outgoing	6
						Shy	3

Video 4, Person with Phonological Disorder

PWS	5	Very Confident	1	Very Confident	2	Nervous	1
Phonol ogical disorde r	22	Confident	16	Confident	9	Self-confident	31
PWC	9	Somewhat Confident	14	Somewhat Confident	18	Capable	19
Fluent speake r	3	Less Confident	6	Less Confident	8	Incompetent	0
		No Confidence	2	No Confidence	3	Insecure	0
						Outgoing	27

						Shy	0
Video 5, Person Who Clutters							
PWS	2	Very Confident	5	Very Confident	4	Nervous	6
Phonological disorder	4	Confident	14	Confident	15	Self-confident	24
PWC	6	Somewhat Confident	15	Somewhat Confident	14	Capable	27
Fluent speaker	27	Less Confident	6	Less Confident	5	Incompetent	1
		No Confidence	0	No Confidence	2	Insecure	5
						Outgoing	8
						Shy	0
Video 6, Person who Clutters							
PWS	0	Very Confident	3	Very Confident	4	Nervous	11
Phonological disorder	9	Confident	21	Confident	20	Self-confident	21
PWC	5	Somewhat Confident	12	Somewhat Confident	12	Capable	22
Fluent speaker	25	Less Confident	2	Less Confident	3	Incompetent	0
		No Confidence	2	No Confidence	1	Insecure	1
						Outgoing	13
						Shy	6

Notes. This table provides information about how participants diagnosed the person represented in each of the six videos, their confidence in identifying the marked characteristics, their confidence in their clinical diagnosis, and the personality traits they believe the person possess.

Table 7***Correlational Analysis***

Variable 1	Variable 2	Spearman's ρ	Prob> ρ
Hrs. in course cluttering	Hrs. in course stuttering	-0.1869	0.2035
Hrs. in grad: assess cluttering	Hrs. in course cluttering	0.310	*0.0144
Hrs. in grad treat cluttering	Hrs. in course cluttering	0.3891	**0.0063
Ability to assess and treat: Fluency	Hrs. in course stuttering	0.1620	0.2513
Level of know: cluttering	Hrs. in course Clutter	-0.0157	0.9157
Ability to assess and treat: social comm	Area of Interest: Fluency	0.287	*0.0431
CEUs: Fluency	Caseload: Social Comm.	0.3621	**0.0083
	Ability to Assess and Treat: Social Comm	0.4405	**0.0011
CEUs: Social Comm	Caseload: Fluency	0.2812	*0.0414
# client: assess stuttering	Caseload: Social Comm	0.3923	**0.0037
	Ability to assess and treat: Social Comm	0.4602	**0.0005
	CEUs: Social Comm	0.0729	0.0639
Level of know: stuttering	Caseload: Social Comm	0.0502	0.7213
Level of exp: stuttering	Ability to assess and treat: Social Comm	0.3491	*0.0104
Hrs. in grad: assess stuttering	Hrs. in grad: treating stuttering	0.363	**< 0.0001
	Hrs. in grad: Assess Stuttering	0.4071	**0.0025
	Clinic hours in grad: treat stuttering	0.2361	0.0887
Hrs. in grad: treat cluttering	Hrs. in grad: assess stuttering	0.2829	*0.0401
	Hrs. in grad: treat stuttering	0.1783	0.2016

Hrs. in grad: assessing cluttering	Hrs. in grad: treating cluttering	0.8514	**<0.0001
Area of interest: Fluency	Hrs. in Grad: Treat Stuttering	0.2186	0.1194
Types of clients on caseload: Fluency	Hrs. in grad school: treating stuttering	0.1757	0.2081
	Hrs. in grad: assessing cluttering	-0.2451	0.0769
	Hrs. in grad: treat cluttering	-0.1739	0.2129
	Area of interest: Fluency	0.3875	**0.0045
Ability to assess and treat: Fluency	Hrs. in grad: Treat Stuttering	0.4640	**0.0005
	Area of Interest: Fluency	0.6113	**<0.0001
	Caseload: ASD	0.2894	*0.0356
	Types of clients on caseload: Fluency	0.6123	**<0.0001
	Ability to assess and treat: ASD	0.3833	**0.0046
CEUs: Fluency	Hrs. in grad: Assess Stuttering	-0.1792	0.2023
	Area of interest: Fluency	0.5628	**<0.0001
	Caseload: Fluency	0.4037	**0.003
	Ability to Assess and Treat: Fluency	0.4550	**0.0007
CEUs: Speech Sounds	Area of Interest: Speech Prod	0.4070	**0.0028
# clients: assess stuttering	Hrs. in grad: asses stuttering	0.2491	0.0720
	Hrs. in grad: treat stuttering	0.3919	**0.0037
	Hrs. in grad: assess cluttering	0.1176	0.4016
	Hrs. in grad: treat cluttering	0.1820	0.1922
	Area of Interest: Fluency	0.5062	**0.0001
	Caseload: ASD	0.4282	**0.0014
	Caseload: Fluency	0.4116	**0.0022

	Ability to assess and treat: Fluency	0.6160	**< 0.0001
	CEUs: Fluency	0.3266	*0.0181
# clients: treat stuttering	Hrs. in grad: assess stuttering	0.2899	*0.0352
	Hrs. in grad: treat stuttering	0.4123	**0.0022
	Area of interest: Fluency	0.4466	**0.0009
	Caseload: Fluency	0.4391	**0.001
	Ability to assess and treat: Fluency	0.5747	**< 0.0001
	CEU: Fluency	0.3491	*0.0112
	# clients: assess stuttering	0.8755	**< 0.0001
# clients: Assess cluttering	Hrs. in grad: assess stuttering	0.2255	0.1044
	Hrs. in grad: treat stuttering	0.2597	0.0604
	Hrs. in grad: asses cluttering	0.3381	**0.0041
	Hrs. in grad: treat cluttering	0.4650	**0.0005
	Area of Interest: Fluency	0.2398	0.0868
	Caseload: Fluency	0.2023	0.1463
	Ability to assess and treat: Fluency	0.2551	0.0653
	CEUs: Fluency	0.2162	0.1236
	# clients: Assess stuttering	0.3824	**0.0047
	# clients: Treat Stuttering	0.4722	**0.0004
# clients: Treat Cluttering	Hrs. in grad: Asses stuttering	0.1825	0.1910
	Hrs. in grad: treat stuttering	0.2428	0.0798
	Hrs. in grad: Assess cluttering	0.4151	**0.002
	Hrs. in grad: treat cluttering	0.5008	**< 0.0001
	Area of Interest: Fluency	0.2523	0.0711

	Caseload: Fluency	0.2074	0.1362
	Ability to Assess and Treat: Fluency	0.3076	0.0251
	CEU's: Fluency	0.1887	0.1804
	# clients: asses stuttering	0.3601	**0.0081
	# clients: Treat stuttering	0.4600	**0.0005
	# clients: asses stuttering	0.9419	**< 0.0001
Level of know: stuttering	Hrs. in grad: Treat stuttering	0.3328	*0.0149
	Area of interest: Fluency	0.5964	**< 0.0001
	Ability to assess and treat: Fluency	0.7194	**< 0.0001
	CEUs: Fluency	0.3304	*0.0168
	# clients: Assess stuttering	0.5520	**< 0.001
	# clients: treat stuttering	0.6125	**< 0.001
	# clients: Assess cluttering	0.3787	**0.0052
	# clients: treat cluttering	0.3842	**0.0045
	Hrs. in grad: Treat Stuttering	0.4338	**0.0012
	Area of Interest: Fluency	0.6571	**< 0.0001
Level of exp: stuttering	Caseload: Fluency	0.6501	**< 0.0001
	Ability to assess and treat: fluency	0.8136	**< 0.0001
	CEUs: Fluency	0.4430	**0.0010
	# Clients: Assess Stuttering	0.6376	**< 0.0001
	# Clients: Treat Stuttering	0.7038	**<

			0.0001
	# Clients: Assess Cluttering	0.4336	**0.0012
	# Clients: Treat Cluttering	0.4536	**0.0006
	Level of know: stuttering	0.9201	**< 0.0001
Level of know: cluttering	Hrs. in grad: Assess cluttering	-0.0360	0.7981
	Hrs. in grad: Treat cluttering	0.1077	0.4426
	Area of Interest: Fluency	0.4860	**0.0003
	Ability to Assess and treat: ASD	0.3672	**0.0068
	Caseload: Fluency	0.4371	**0.0011
	Ability to assess and treat: Fluency	0.5756	**< 0.0001
	CEUs: Fluency	0.3781	**0.0057
	# Clients: assess stuttering	0.5744	**< 0.0001
	# Clients: treat stuttering	0.6924	**< 0.0001
	# Clients: assess cluttering	0.5701	**< 0.0001
	# Clients: treat cluttering	0.6130	**< 0.0001
	Level of know: stuttering	0.7240	**< 0.0001
Level of exp: cluttering	Hrs. in grad: Assess Cluttering	0.0305	0.8301
	Hrs. in grad: Treat Cluttering	0.1924	0.1717
	Area of interest: Fluency	0.5029	**0.0002
	Caseload: Fluency	0.4039	**0.0030
	Ability to assess and treat: Fluency	0.6185	**< 0.0001
	Ability to assess and treat:	0.5030	**0.0001

Fluency			
CEUs: Fluency	0.3401	*0.0146	
# Clients: Assess Stuttering	0.5305	**<	0.0001
# Clients: Treat Stuttering	0.5703	**<	0.0001
# Clients: Assess Cluttering	0.6162	**<	0.0001
# Clients: Treat Cluttering	0.6368	**<	0.0001
Level of know: stuttering	0.5885	**<	0.001
Level of exp: stuttering	0.6358	**<	0.0001
Level of know: cluttering	0.8679	**<	0.0001

Note. Column one and two presents the item of comparison. Column three represents the correlational value as Spearman's ρ and column 4 presents the significance probability value.

*: Trending towards the threshold, **: Meets the threshold.

Table 8***Factor loadings for fluency variables***

Variable	Factor 1 Interest in Fluency	Factor 2 Experience with Stuttering Clients	Factor 3 Experience with Cluttering Clients
1 - What is your ability to assess and treat clients with the following disorders? - Fluency Disorders	0.8135174387	-0.189975271	0.0126987604
2 - Area of Interest: Fluency	0.747395133	-0.171656462	0.0616158453
3 - Over the last year indicate the types of clients typically on your caseload: - Fluency Disorders	0.6442385218	-0.152953597	-0.247472596
4 - I have pursued CEUs in these areas over the past 3 years: - Fluency Disorders	0.6152842572	-0.257832223	-0.157582937
5 - Treatment of Stuttering	-0.315170467	0.8751463627	0.3115469969
6 - Assessment of Stuttering	-0.326664417	0.8599500805	0.2379029313
7 - Treatment of Cluttering	-0.05118246	0.2241589545	0.9732071621
8 - Assessment of Cluttering	-0.110458983	0.2317077918	0.9257521134

Note. Survey items are presented in column one, factors are presented 2-4 with eigen values for weighted contribution to the factors. Items of value presented in black font contribute to the associated factors.

Table 9***Knowledge predicted by fluency factors***

Stutter Sig level (direction)	Interest in Fluency	Exp with stuttering clients	Exp with cluttering clients	Model r^2 ($ps > 0.40$)
Hits	0.2141	0.4519	0.7515	.05
Foils	0.6926	0.829	0.4592	.01
Total	0.1514 (-)	0.9986	0.3046	.06
Clutter Sig level	Interest in Fluency	Exp with stuttering clients	Exp with cluttering clients	Model r^2 (* $p < 0.05$)
Hits	0.021 (-)	0.9491	0.1381	.15*
Foils	0.3349	0.8272	0.8587	.02
Total	0.6712	0.6491	0.2997	.03

Note. The table presents probability values for factors one through three (interest in fluency, experience with stuttering, experience with cluttering). Sequentially, in columns 2 through 4 for the linear regression analysis comparing the factor values to hits, foils, and total identified characteristics for when participants were presented with the diagnostic terms. Column five presents the r squared value for the items.

Table 10***Videos predicted by fluency factors***

Stutter Sig level	Interest in Fluency	Exp with stuttering clients	Exp with cluttering clients	Model r^2 (* $p < 0.05$)
Hits V1	0.6213	0.7752	0.4167	.02
Hits V3	0.783	0.0946	0.6654	.06
Foils V1	0.483	0.3581	0.2497	.05
Foils V3	0.783	0.0946	0.6654	.03
Total V1	0.0764	0.4064	0.3066	.10
Total V3	0.1493	0.0395	0.2072	.16*
Clutter Sig level	Interest in Fluency	Exp with stuttering clients	Exp with cluttering clients	Model r^2 (* $p < 0.05$)
Hits V5	0.4754	0.5721	0.0028	.19*
Hits V6	0.5303	0.406	0.0165	.14*
Foils V5	0.181	0.7329	0.1441	.09
Foils V6	0.3286	0.2823	0.2212	.07
Total V5	0.8903	0.4038	0.3186	.04
Total V6	0.7094	0.0207	0.885	.12

Note. The table presents probability values for factors one through three (interest in fluency, experience with stuttering, experience with cluttering). Sequentially, in columns 2 through 4 for the linear regression analysis comparing the factor values to hits, foils, and total identified characteristics for videos one, three, five and six of speakers who stutter and clutter. Column five presents the r squared value for the items.

Table 11***Factor loadings for phonological variables***

Variables	Factor 1	Factor 2
1 - Rate the following: - Level of experience with phonological disorders	0.9619384567	0.2732664548
2 - Rate the following: - Level of knowledge of phonological disorders	0.8380379118	0.2805913692
3 - What is your ability to assess and treat clients with the following disorders? - Speech Sound Disorder: Articulation and Phonology	0.5277712396	0.4555715692
4 - Over the last year indicate the types of clients typically on your caseload: - Speech Sound Disorder: Articulation and Phonology	0.1661628485	0.9607890353
5 - I have pursued CEUs in these areas over the past 3 years: - Speech Sound Disorder: Articulation and Phonology	0.2898452545	0.5456046307
6 - Area of Interest: Speech Production	0.1986520042	0.3310949886

Note. Survey items are presented in column one, factors are presented 2-3 with eigen values for weighted contribution to the factors. Items of value presented in black font contribute to the associated factors.

Table 12***Phonological knowledge predicted by phonological factors***

Phonological Sig level	Self-rated knowledge/ability	Interest in Phonological	Model r^2 (* $p < 0.05$ ** $p < 0.01$)
Hits	0.0008	0.8826	.21**
Foils	0.5817	0.8999	.01
Total	0.0358	0.7540	.09

Note. The table presents probability values for factors one and two (self-rated knowledge ability and interest in phonological disorders). Sequentially, in columns 2 and 3 for the linear regression analysis comparing the factor values to hits, foils, and total identified characteristics when presented with the diagnostic term. Column four presents the r squared value for the items.

Table 13***Phonological performance predicted by phonological factors***

Phonological Sig level	Self-rated knowledge/ability	Interest in Phonological	Model r^2 (* $p < 0.05$ ** $p < 0.01$)
Hits V2	0.0835	0.4142	.07
Hits V4	0.7383	0.6209	.01
Foils V2	0.7019	0.535	.01
Foils V4	0.349	0.3584	.04
Total V2	0.3631	0.3503	.04
Total V4	0.2661	0.6027	.03

Note. The table presents probability values for factors one and two (self-rated knowledge ability and interest in phonological disorders). Sequentially, in columns 2 and 3 for the linear regression analysis comparing the factor values to hits, foils, and total identified characteristics for videos two and four of speakers with phonological disorders. Column four presents the r squared value for the items.

Appendix A: Survey

Assessing Speech Language Pathologists' (SLP) Level of Knowledge and Experience with Clutter

Link to Survey: https://isu.co1.qualtrics.com/jfe/form/SV_cRVygUJfl1hObqJ

1 Informed Consent Form Assessing Speech Language Pathologists' (SLP) Level of Knowledge and Experience with Cluttering IRB-FY2020-4

We are asking you to be in a research study.

You do not have to be in this study.

If you say yes, you may quit the study at any time.

Please take as much time as you want to make your choice to participate.

Why is this study being done?

Previous research has touched upon education standards for fluency disorders but there has yet to be a comparison of practicing SLP's training, knowledge and experience of stuttering, cluttering, and phonological disorders. We are asking people like you who are practicing, state-licensed, American Speech-Language-Hearing Association (ASHA) certified Speech Language Pathologists (SLPs) and graduate students who have completed the fluency disorders discourse required by Idaho State University in the year 2018. Your participation in the research study is voluntary. Before agreeing to be part of this study, please read the following information carefully.

What happens if I say yes, I want to be in the study?

If you decide to participate in this study, you will be asked to complete this online questionnaire. Any computer can access the online questionnaire with Internet access. Questionnaire data and feedback will be kept on a firewall, password protected computer. Data will remain confidential, as your email will not be associated with the questionnaire.

How long will the study take?

Your participation will take approximately 20 minutes.

What happens if I say no, I do not want to be in the study?

Participation in research is entirely voluntary. Students who are enrolled within the Speech Language Pathology (SLP) program should know that participating in the study is completely separate from any course or program requirements, declining to participate will have no effect on grades or standing within your SLP program. You have the right to refuse to be in this study. Non participation will have no negative consequences and participation is completely separate from the investigator's evaluations of students who are enrolled at Idaho State Universities Department of Communication Sciences and Disorders.

What happens if I say yes, but change my mind later?

If you decide to be in the study and change your mind, you have the right to drop out at any time. You may skip questions or stop participating at any time.

Who will see my Responses?

The only people who will see your response will be the people who work on the study. These names can be found below. However, there will be no way for the researchers to identify who participants are because no identifying information will be linked to your results. The survey software Qualtrics provides for anonymous responding. Questionnaire data and feedback will be

kept on a firewall, password protected computer. Data will remain confidential, as we are not collecting any identifiable information. Data will be presented in aggregated formats. The results of this study may be used in reports, presentations, and publications.

Will it cost me anything to be in the study?

No.

Will being in this study help me in any way?

Being in this study will not help you, but may help Speech Language Pathology Educators by refining what we know about the educational standards of Speech Language Pathology.

Will I be paid for my time?

Yes, if you choose to follow the link provided at the end of the survey you can enter your email into a raffle to win a \$50 Amazon gift cards.

Is there any way being in this study could be bad for me?

There are no anticipated risks beyond those encountered in everyday life. If you do not wish to answer a question, you may skip it and go on to the next question. There may include a small risk that answering questions upon your current level of speech language pathology skills will cause discomfort. If this occurs, please discontinue taking the survey and you may if you choose reach out to the research team for support. We will do our best to protect your privacy.

What if I have questions?

Please call the head of the study Kristen Leucuta (630) 946-9026 if you: Have questions about the study, have questions about your rights, you can also call the Idaho State University Human Subjects Committee office at 208-282-2179 to ask questions about your rights as a research subject.

Providing Consent:

By completing the online survey, you are saying several things. You are saying that you have read this form or have had it read to you, that you are satisfied that you understand this form, the research study, and its risks and benefits. The researchers should have answered any questions you may have had about the research. If you have any questions later on, then the researchers should be able to answer them. If at any time you feel pressured to participate, or if you have any questions about your rights or this form, then you should call Kristen Leucuta (630) 946-9026. You may also contact the Idaho State University Human Subjects Committee office at 208-282-2179.

You may now print a copy of this consent form to keep for your records.

Participants' Consent Statement:

If you are willing to volunteer for this research and participate in this online questionnaire, please continue on with the questionnaire.

Thank you,

Kristen Leucuta, B.A.
MS Graduate Student 2017-2020

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2 Gender Expression

- ☐ Male
- ☐ Female
- ☐ Transgender
- ☐ Gender Variant/Non-Conforming
- ☐ Don't want to respond

3 Age

	0	1 0	2 0	3 0	4 0	5 0	6 0	7 0	8 0	9 0	1 0 0
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Age in Years	
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4 How many years have you been practicing as a Speech-Language Pathologist?

	0	10	20	30	40	50
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Years Practiced	
-----------------	--

5 Please select highest level of education.

- ☐ Bachelor's Degree
- ☐ Master's Degree
- ☐ Doctoral Degree
- ☐ Please list current certifications here:

6 Where have you practiced? (Select all that apply)

- ☐ Hospital
- ☐ School
- ☐ Skilled Nursing Facility
- ☐ Acute Care
- ☐ Private Practice
- ☐ Other _____

7 Where do you primarily practice? Check all that apply:

- ☐ Hospital
 - ☐ School
 - ☐ Skilled Nursing Facility
 - ☐ Acute Care
 - ☐ Private Practice
 - ☐ Other _____
-

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8 Was a course in fluency disorders offered during your program? Select all that apply:

- ☐ Required at the Undergraduate Level
- ☐ Optional at the Undergraduate Level
- ☐ Required at the Graduate Level
- ☐ Optional at the Graduate Level
- ☐ A course in fluency disorders was not required
- ☐ I don't know

Skip To: 10 If Was a course in fluency disorders offered during your program? Select all that apply: = A course in fluency disorders was not required

Skip To: 10 If Was a course in fluency disorders offered during your program? Select all that apply: = I don't know

9 Approximately how many hours were spent in class covering the following fluency disorders? (A 2 credit hour course is approximately 30 hours, 3 credit hour course is approximately 45 hours)

	0	50
Stuttering		
Cluttering and Other Fluency Disorders		

10 Did your program require you to complete clinical hours in fluency disorders?

- ☐ Yes
- ☐ No
- ☐ I do not know

11 Approximately how many clinical hours in fluency disorders did you acquire in your graduate program?

	0	50
--	---	----

Assessment of Stuttering	
Treatment of Stuttering	
Assessment of Cluttering	
Treatment of Cluttering	

12 Indicate your area(s) of interest within Speech Language Pathology (select all that apply):

	Very Interested	Somewhat Interested	Neutral	Not Very Interested	Not at all Interested
Fluency	☐	☐	☐	☐	☐
Speech Production	☐	☐	☐	☐	☐
Language	☐	☐	☐	☐	☐
Cognition	☐	☐	☐	☐	☐
Voice	☐	☐	☐	☐	☐
Resonance	☐	☐	☐	☐	☐
Feeding and Swallowing	☐	☐	☐	☐	☐
Auditory Habilitation/Rehabilitation	☐	☐	☐	☐	☐

13 Over the last year indicate the types of clients typically on your caseload:

	Very Often	Often	Sometimes	Seldom	Never
Acquired Apraxia of Speech	☐	☐	☐	☐	☐
Aphasia	☐	☐	☐	☐	☐
Apraxia of Speech	☐	☐	☐	☐	☐
Augmentative and Alternative Communication (AAC)	☐	☐	☐	☐	☐
Autism Spectrum Disorder (ASD)	☐	☐	☐	☐	☐
Cleft Lip and Palate	☐	☐	☐	☐	☐
Cochlear Implants	☐	☐	☐	☐	☐
Dementia	☐	☐	☐	☐	☐
Dysarthria	☐	☐	☐	☐	☐
Feed and Swallowing	☐	☐	☐	☐	☐
Fluency Disorders	☐	☐	☐	☐	☐
Late Language Emergence	☐	☐	☐	☐	☐
Orofacial Myofunctional Disorders	☐	☐	☐	☐	☐
Resonance Disorders	☐	☐	☐	☐	☐

Right Hemisphere Damage	☐	☐	☐	☐	☐
Social Communication Disorder	☐	☐	☐	☐	☐
Speech Sound Disorder: Articulation and Phonology	☐	☐	☐	☐	☐
Traumatic Brain Injury	☐	☐	☐	☐	☐
Voice Disorders	☐	☐	☐	☐	☐
Written Language Disorders	☐	☐	☐	☐	☐

14 What is your ability to assess and treat clients with the following disorders?

	Skilled	Somewhat skilled	Neither skilled or unskilled	Somewhat Unskilled	Unskilled
Acquired Apraxia of Speech	☐	☐	☐	☐	☐
Aphasia	☐	☐	☐	☐	☐
Apraxia of Speech	☐	☐	☐	☐	☐
Augmentative and Alternative Communication (AAC)	☐	☐	☐	☐	☐
Autism Spectrum Disorder (ASD)	☐	☐	☐	☐	☐
Cleft Lip and Palate	☐	☐	☐	☐	☐
Cochlear Implants	☐	☐	☐	☐	☐
Dementia	☐	☐	☐	☐	☐
Dysarthria	☐	☐	☐	☐	☐
Feed and Swallowing	☐	☐	☐	☐	☐
Fluency Disorders	☐	☐	☐	☐	☐
Late Language Emergence	☐	☐	☐	☐	☐
Orofacial Myofunctional Disorders	☐	☐	☐	☐	☐

Resonance Disorders	☐	☐	☐	☐	☐
Right Hemisphere Damage	☐	☐	☐	☐	☐
Social Communication Disorder	☐	☐	☐	☐	☐
Speech Sound Disorder: Articulation and Phonology	☐	☐	☐	☐	☐
Traumatic Brain Injury	☐	☐	☐	☐	☐
Voice Disorders	☐	☐	☐	☐	☐
Written Language Disorders	☐	☐	☐	☐	☐

15 I have pursued CEUs in these areas over the past 3 years:

	Frequently	Very Often	Sometimes	Rarely	Never
Acquired Apraxia of Speech	☐	☐	☐	☐	☐
Aphasia	☐	☐	☐	☐	☐
Apraxia of Speech	☐	☐	☐	☐	☐
Augmentative and Alternative Communication (AAC)	☐	☐	☐	☐	☐
Autism Spectrum Disorder (ASD)	☐	☐	☐	☐	☐
Cleft Lip and Palate	☐	☐	☐	☐	☐
Cochlear Implants	☐	☐	☐	☐	☐
Dementia	☐	☐	☐	☐	☐
Dysarthria	☐	☐	☐	☐	☐
Feed and Swallowing	☐	☐	☐	☐	☐
Fluency Disorders	☐	☐	☐	☐	☐
Late Language Emergence	☐	☐	☐	☐	☐
Orofacial Myofunctional Disorders	☐	☐	☐	☐	☐
Resonance Disorders	☐	☐	☐	☐	☐

Right Hemisphere Damage	☐	☐	☐	☐	☐
Social Communication Disorder	☐	☐	☐	☐	☐
Speech Sound Disorder: Articulation and Phonology	☐	☐	☐	☐	☐
Traumatic Brain Injury	☐	☐	☐	☐	☐
Voice Disorders	☐	☐	☐	☐	☐
Written Language Disorders	☐	☐	☐	☐	☐

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16 Approximately how many clients who stutter or clutter have you assessed or treated?

	0	100 or more
Assessment of Stuttering		
Treatment of Stuttering		
Assessment of Cluttering		
Treatment of Cluttering		

17 Rate the following:

	Extremely good	Moderately good	Slightly good	Neither good nor bad	Slightly bad
Level of knowledge of phonological disorders	☐	☐	☐	☐	☐
Level of experience with phonological disorders	☐	☐	☐	☐	☐
Level of knowledge of stuttering	☐	☐	☐	☐	☐
Level of experience with stuttering	☐	☐	☐	☐	☐
Level of knowledge of cluttering	☐	☐	☐	☐	☐
Level of experience with cluttering	☐	☐	☐	☐	☐

18 Check all characteristics you might see with someone who has a phonological disorder:

- ☐ Use of interjection or filler words
- ☐ Word produced with physical tension
- ☐ Head movements
- ☐ Distracting sounds
- ☐ Facial grimaces
- ☐ Extremity movements
- ☐ Sound or word avoidance
- ☐ Audible or silent blocking
- ☐ Fast and/or irregular speech rate
- ☐ Word structure
- ☐ Prolongations of sounds
- ☐ Speech pauses
- ☐ Part word or sound/syllable repetitions
- ☐ Disfluencies
- ☐ Monosyllabic whole-word repetitions
- ☐ Prosody errors
- ☐ Intelligibility
- ☐ Whole words/syllable errors
- ☐ Distortions
- ☐ Speech Pauses
- ☐ Handwriting/writing problems

- ☐ Attention and concentration
 - ☐ Planning difficulties
 - ☐ Additions
 - ☐ Substitutions
 - ☐ Omissions/deletions
-

19 Check all characteristics you might see with someone who stutters:

- ☐ Use of interjection or filler words
- ☐ Word produced with physical tension
- ☐ Head movements
- ☐ Distracting sounds
- ☐ Facial grimaces
- ☐ Extremity movements
- ☐ Sound or word avoidance
- ☐ Audible or silent blocking
- ☐ Fast and/or irregular speech rate
- ☐ Word structure
- ☐ Prolongations of sounds
- ☐ Speech pauses
- ☐ Part word or sound/syllable repetitions
- ☐ Disfluencies
- ☐ Monosyllabic whole-word repetitions
- ☐ Prosody errors
- ☐ Intelligibility
- ☐ Whole words/syllable errors
- ☐ Distortions
- ☐ Speech Pauses
- ☐ Handwriting/writing problems

- ☐ Attention and concentration
- ☐ Planning difficulties
- ☐ Additions
- ☐ Substitutions
- ☐ Omissions/deletions

20 Check all characteristics you might see with someone who clutters:

- ☐ Use of interjection or filler words
- ☐ Word produced with physical tension
- ☐ Head movements
- ☐ Distracting sounds
- ☐ Facial grimaces
- ☐ Extremity movements
- ☐ Sound or word avoidance
- ☐ Audible or silent blocking
- ☐ Fast and/or irregular speech rate
- ☐ Word structure
- ☐ Prolongations of sounds
- ☐ Speech pauses
- ☐ Part word or sound/syllable repetitions
- ☐ Disfluencies
- ☐ Monosyllabic whole-word repetitions
- ☐ Prosody errors
- ☐ Intelligibility
- ☐ Whole words/syllable errors
- ☐ Distortions
- ☐ Speech Pauses
- ☐ Handwriting/writing problems

- ☐ Attention and concentration
 - ☐ Planning difficulties
 - ☐ Additions
 - ☐ Substitutions
 - ☐ Omissions/deletions
-

Page Break

21 In the next and final section of this survey, you will be presented with 15 second videos of speakers who may or may not have speech disorders. After each video, you will be asked to check all the characteristics you observed, diagnose the client, and then rate your comfortability/comfort level with the process.

Page Break

Mark the characteristics that apply to the speaker.

- ☐ Use of interjection or filler words
- ☐ Word produced with physical tension
- ☐ Head movements
- ☐ Distracting sounds
- ☐ Facial grimaces
- ☐ Extremity movements
- ☐ Sound or word avoidance
- ☐ Audible or silent blocking
- ☐ Fast and/or irregular speech rate
- ☐ Word structure
- ☐ Prolongations of sounds
- ☐ Speech pauses
- ☐ Part word or sound/syllable repetitions
- ☐ Disfluencies
- ☐ Monosyllabic whole-word repetitions
- ☐ Prosody errors
- ☐ Intelligibility
- ☐ Whole words/syllable errors
- ☐ Distortions
- ☐ Speech Pauses

- ☐ Handwriting/writing problems
 - ☐ Attention and concentration
 - ☐ Planning difficulties
 - ☐ Additions
 - ☐ Substitutions
 - ☐ Omissions/deletions
-

23 (OPTIONAL) Why did you select the characteristics you did?

24 They are:

- ☐ A person who stutters
 - ☐ A person who has a phonological disorder
 - ☐ A person who clutters
 - ☐ They are a typically fluent speaker
-

25 Personality traits of the speaker in the video include:

- ☐ Nervous
- ☐ Self-confident
- ☐ Capable
- ☐ Incompetent
- ☐ Insecure
- ☐ Outgoing
- ☐ Shy
-

26 How confident are you in your assessment of this persons' marked characteristics in the video?

	Very Confident	Confident	Somewhat Confident	Less Confident	No Confidence
Confidence	☐	☐	☐	☐	☐

27 How confident are you in your assessment of this persons' clinical diagnosis in the video?

	Very Confident	Confident	Somewhat Confident	Less Confident	No Confidence
Confidence	☐	☐	☐	☐	☐

Page Break

28

Mark the characteristics that apply to the speaker.

- ☐ Use of interjection or filler words
- ☐ Word produced with physical tension
- ☐ Head movements
- ☐ Distracting sounds
- ☐ Facial grimaces
- ☐ Extremity movements
- ☐ Sound or word avoidance
- ☐ Audible or silent blocking
- ☐ Fast and/or irregular speech rate
- ☐ Word structure
- ☐ Prolongations of sounds
- ☐ Speech pauses
- ☐ Part word or sound/syllable repetitions
- ☐ Disfluencies
- ☐ Monosyllabic whole-word repetitions
- ☐ Prosody errors
- ☐ Intelligibility
- ☐ Whole words/syllable errors
- ☐ Distortions
- ☐ Speech Pauses
- ☐ Handwriting/writing problems

- ☐ Attention and concentration
 - ☐ Planning difficulties
 - ☐ Additions
 - ☐ Substitutions
 - ☐ Omissions/deletions
-

29 (OPTIONAL) Why did you select the characteristics you did?

30 They are:

- ☐ A person who stutters
 - ☐ A person who has a phonological disorder
 - ☐ A person who clutters
 - ☐ They are a typically fluent speaker
-

31 Personality traits of the speaker in the video include:

- ☐ Nervous
- ☐ Self-confident
- ☐ Capable
- ☐ Incompetent
- ☐ Insecure
- ☐ Outgoing
- ☐ Shy

32 How confident are you in your assessment of this persons' marked characteristics in the video?

	Very Confident	Confident	Somewhat Confident	Less Confident	No Confidence
Confidence	☐	☐	☐	☐	☐

33 How confident are you in your assessment of this persons' clinical diagnosis in the video?

	Very Confident	Confident	Somewhat Confident	Less Confident	No Confidence
Confidence	☐	☐	☐	☐	☐

Page Break

34

Mark the characteristics that apply to the speaker.

- ☐ Use of interjection or filler words
- ☐ Word produced with physical tension
- ☐ Head movements
- ☐ Distracting sounds
- ☐ Facial grimaces
- ☐ Extremity movements
- ☐ Sound or word avoidance
- ☐ Audible or silent blocking
- ☐ Fast and/or irregular speech rate
- ☐ Word structure
- ☐ Prolongations of sounds
- ☐ Speech pauses
- ☐ Part word or sound/syllable repetitions
- ☐ Disfluencies
- ☐ Monosyllabic whole-word repetitions
- ☐ Prosody errors
- ☐ Intelligibility
- ☐ Whole words/syllable errors
- ☐ Distortions
- ☐ Speech Pauses

- ☐ Handwriting/writing problems
 - ☐ Attention and concentration
 - ☐ Planning difficulties
 - ☐ Additions
 - ☐ Substitutions
 - ☐ Omissions/deletions
-

35 (OPTIONAL) Why did you select the characteristics you did?

36 They are:

- ☐ A person who stutters
 - ☐ A person who has a phonological disorder
 - ☐ A person who clutters
 - ☐ They are a typically fluent speaker
-

37 Personality traits of the speaker in the video include:

- ☐ Nervous
- ☐ Self-confident
- ☐ Capable
- ☐ Incompetent
- ☐ Insecure
- ☐ Outgoing
- ☐ Shy
-

38 How confident are you in your assessment of this persons' marked characteristics in the video?

	Very Confident	Confident	Somewhat Confident	Less Confident	No Confidence
Confidence	☐	☐	☐	☐	☐

39 How confident are you in your assessment of this persons' clinical diagnosis in the video?

	Very Confident	Confident	Somewhat Confident	Less Confident	No Confidence
Confidence	☐	☐	☐	☐	☐

Page Break

40

Mark the characteristics that apply to the speaker.

- ☐ Use of interjection or filler words
- ☐ Word produced with physical tension
- ☐ Head movements
- ☐ Distracting sounds
- ☐ Facial grimaces
- ☐ Extremity movements
- ☐ Sound or word avoidance
- ☐ Audible or silent blocking
- ☐ Fast and/or irregular speech rate
- ☐ Word structure
- ☐ Prolongations of sounds
- ☐ Speech pauses
- ☐ Part word or sound/syllable repetitions
- ☐ Disfluencies
- ☐ Monosyllabic whole-word repetitions
- ☐ Prosody errors
- ☐ Intelligibility
- ☐ Whole words/syllable errors
- ☐ Distortions
- ☐ Speech Pauses

- ☐ Handwriting/writing problems
 - ☐ Attention and concentration
 - ☐ Planning difficulties
 - ☐ Additions
 - ☐ Substitutions
 - ☐ Omissions/deletions
-

41 (OPTIONAL) Why did you select the characteristics you did?

42 They are:

- ☐ A person who stutters
 - ☐ A person who has a phonological disorder
 - ☐ A person who clutters
 - ☐ They are a typically fluent speaker
-

43 Personality traits of the speaker in the video include:

- ☐ Nervous
- ☐ Self-confident
- ☐ Capable
- ☐ Incompetent
- ☐ Insecure
- ☐ Outgoing
- ☐ Shy
-

44 How confident are you in your assessment of this persons' marked characteristics in the video?

	Very Confident	Confident	Somewhat Confident	Less Confident	No Confidence
Confidence	☐	☐	☐	☐	☐

45 How confident are you in your assessment of this persons' clinical diagnosis in the video?

	Very Confident	Confident	Somewhat Confident	Less Confident	No Confidence
Confidence	☐	☐	☐	☐	☐

Page Break

46 Mark the characteristics that apply to the speaker.

- ☐ Use of interjection or filler words
- ☐ Word produced with physical tension
- ☐ Head movements
- ☐ Distracting sounds
- ☐ Facial grimaces
- ☐ Extremity movements
- ☐ Sound or word avoidance
- ☐ Audible or silent blocking
- ☐ Fast and/or irregular speech rate
- ☐ Word structure
- ☐ Prolongations of sounds
- ☐ Speech pauses
- ☐ Part word or sound/syllable repetitions
- ☐ Disfluencies
- ☐ Monosyllabic whole-word repetitions
- ☐ Prosody errors
- ☐ Intelligibility
- ☐ Whole words/syllable errors
- ☐ Distortions
- ☐ Speech Pauses
- ☐ Handwriting/writing problems
- ☐ Attention and concentration

- ☐ Planning difficulties
 - ☐ Additions
 - ☐ Substitutions
 - ☐ Omissions/deletions
-

47 (OPTIONAL) Why did you select the characteristics you did?

48 They are:

- ☐ A person who stutters
 - ☐ A person who has a phonological disorder
 - ☐ A person who clutters
 - ☐ They are a typically fluent speaker
-

49 Personality traits of the speaker in the video include:

- ☐ Nervous
 - ☐ Self-confident
 - ☐ Capable
 - ☐ Incompetent
 - ☐ Insecure
 - ☐ Outgoing
 - ☐ Shy
-

50 How confident are you in your assessment of this persons' marked characteristics in the video?

	Very Confident	Confident	Somewhat Confident	Less Confident	No Confidence
Confidence	☐	☐	☐	☐	☐

51 How confident are you in your assessment of this persons' clinical diagnosis in the video?

	Very Confident	Confident	Somewhat Confident	Less Confident	No Confidence
Confidence	☐	☐	☐	☐	☐

Page Break

52

Mark the characteristics that apply to the speaker.

- ☐ Use of interjection or filler words
- ☐ Word produced with physical tension
- ☐ Head movements
- ☐ Distracting sounds
- ☐ Facial grimaces
- ☐ Extremity movements
- ☐ Sound or word avoidance
- ☐ Audible or silent blocking
- ☐ Fast and/or irregular speech rate
- ☐ Word structure
- ☐ Prolongations of sounds
- ☐ Speech pauses
- ☐ Part word or sound/syllable repetitions
- ☐ Disfluencies
- ☐ Monosyllabic whole-word repetitions
- ☐ Prosody errors
- ☐ Intelligibility
- ☐ Whole words/syllable errors
- ☐ Distortions
- ☐ Speech Pauses

- ☐ Handwriting/writing problems
 - ☐ Attention and concentration
 - ☐ Planning difficulties
 - ☐ Additions
 - ☐ Substitutions
 - ☐ Omissions/deletions
-

53 (OPTIONAL) Why did you select the characteristics you did?

54 They are:

- ☐ A person who stutters
 - ☐ A person who has a phonological disorder
 - ☐ A person who clutters
 - ☐ They are a typically fluent speaker
-

55 Personality traits of the speaker in the video include:

- ☐ Nervous
- ☐ Self-confident
- ☐ Capable
- ☐ Incompetent
- ☐ Insecure
- ☐ Outgoing
- ☐ Shy
-

56 How confident are you in your assessment of this persons' marked characteristics in the video?

	Very Confident	Confident	Somewhat Confident	Less Confident	No Confidence
Confidence	☐	☐	☐	☐	☐

57 How confident are you in your assessment of this persons' clinical diagnosis in the video?

	Very Confident	Confident	Somewhat Confident	Less Confident	No Confidence
Confidence	☐	☐	☐	☐	☐

Page Break

58 Is there any additional information you would like to add?

Page Break

59 If you would like to be entered into the raffle for the \$50 Amazon gift card, please follow the link presented: https://isu.co1.qualtrics.com/jfe/form/SV_0p3uVvvxVC34shT

By clicking on the link your answers in Qualtrics will be not associated with your email and will remain anonymous.

Appendix B: Survey Validation

Question Number	Survey Question	Reference
1	Gender Expression	Pellowski (2010) St. Louis et al., (2010) St. Louis et al., (2014) Boyle (2013) Koutsodimitropoulos et al., (2015)
2	Age	Pellowski (2010) St. Louis et al., (2010) St. Louis et al., (2014) Boyle (2013) Koutsodimitropoulos et al., (2015)
3	How many years have you been practicing as a Speech-Language Pathologist?	Pellowski (2010)
4	Education	Pellowski (2010) Yaruss & Quesal (2002)
5	Where have you practiced?	Pellowski (2010)
6	Where do you primarily practice? Check all that apply:	Pellowski (2010)
7	Was a course in fluency disorders offered during your program? Select all that apply:	Yaruss & Quesal (2002)
8	Approximately how many hours were spent in class covering the following fluency disorders? (A 2-credit hour course is approximately 30 hours; 3 credit hour course is approximately 45 hours)	Yaruss & Quesal (2002)
9	Did your program require you to complete clinical hours in fluency disorders?	Yaruss & Quesal (2002)
10	Approximately how many clinical hours in fluency disorders did you acquire in your graduate program?	Yaruss & Quesal (2002)

11	Indicate your area(s) of interest within Speech Language Pathology (select all that apply):	Yaruss & Quesal (2002)
12	Over the last year indicate the types of clients typically on your caseload:	Yaruss & Quesal (2002)
13	What is your ability to assess and treat clients with the following disorders?	Pellowski (2010)
14	I have pursued CEUs in these areas over the past 3 years:	Yaruss & Quesal (2002)
15	Approximately how many clients who stutter or clutter have you assessed or treated?	Yaruss & Quesal (2002)
16	Rate the following: Level of knowledge of phonological disorders Level of experience with phonological disorders Level of knowledge of stuttering Level of experience with stuttering Level of knowledge of cluttering Level of experience with cluttering	St. Louis et al., (2010)
17	Check all characteristics you might see with someone who has a phonological disorder:	St. Louis et al., (2010) St. Louis et al., (2014)
18	Check all characteristics you might see with someone who stutters:	St. Louis et al., (2010) St. Louis et al., (2014)
19	Check all characteristics you might see with someone who clutters:	St. Louis et al., (2010) St. Louis et al., (2014)
20	Present Video of a person who stutters Mark the characteristics that apply to the speaker.	Farrell, Blanchet, & Tillery (2015) Yaruss & Quesal (2002)
21	(Optional) Why did you select the characteristics you did?	
22	They are: A person who stutters A person who has a phonological disorder A person who clutters They are a typically fluent speaker	St. Louis et al., (2010)

23	Personality traits of the speaker in the video include:	Boyle (2013) Koutsodimitropoulos et al., (2015) St. Louis et al., (2014)
24	How confident are you in your assessment of this persons' marked characteristics in the video?	Pellowski (2010)
25	How confident are you in your assessment of this persons' clinical diagnosis in the video?	Pellowski (2010)
26	Present Video of someone who has a phonological disorder. Mark the characteristics that apply to the speaker.	Farrell, Blanchet, & Tillery (2015) Yaruss & Quesal (2002)
27	(Optional) Why did you select the characteristics you did?	
28	They are: A person who stutters A person who has a phonological disorder A person who clutters They are a typically fluent speaker	St. Louis et al., (2010)
29	Personality traits of the speaker in the video include:	Boyle (2013) Koutsodimitropoulos et al., (2015) St. Louis et al., (2014)
30	How confident are you in your assessment of this persons' marked characteristics in the video?	Pellowski (2010)
31	How confident are you in your assessment of this persons' clinical diagnosis in the video?	Pellowski (2010)
32	Present Video of someone who stutters. Mark the characteristics that apply to the speaker.	Farrell, Blanchet, & Tillery (2015) Yaruss & Quesal (2002)
33	(Optional) Why did you select the characteristics you did?	
34	They are: A person who stutters	St. Louis et al., (2010)

	A person who has a phonological disorder A person who clutters They are a typically fluent speaker	
35	Personality traits of the speaker in the video include:	Boyle (2013) Koutsodimitropoulos et al., (2015) St. Louis et al., (2014)
36	How confident are you in your assessment of this persons' marked characteristics in the video?	Pellowski (2010)
37	How confident are you in your assessment of this persons' clinical diagnosis in the video?	Pellowski (2010)
38	Present Video of a person with a phonological disorder. Mark the characteristics that apply to the speaker.	Farrell, Blanchet, & Tillery (2015) Yaruss & Quesal (2002)
39	(Optional) Why did you select the characteristics you did?	
40	They are: A person who stutters A person who has a phonological disorder A person who clutters They are a typically fluent speaker	St. Louis et al., (2010)
41	Personality traits of the speaker in the video include:	Boyle (2013) Koutsodimitropoulos et al., (2015) St. Louis et al., (2014)
42	How confident are you in your assessment of this persons' marked characteristics in the video?	Pellowski (2010)
43	How confident are you in your assessment of this persons' clinical diagnosis in the video?	Pellowski (2010)
44	Present Video of a person who clutters. Mark the characteristics that apply to the speaker.	Farrell, Blanchet, & Tillery (2015) Yaruss & Quesal (2002)

- 45 (Optional) Why did you select the characteristics you did?
- 46 They are: St. Louis et al., (2010)
 A person who stutters
 A person who has a phonological disorder
 A person who clutters
 They are a typically fluent speaker
- 47 Personality traits of the speaker in the video include: Boyle (2013)
 Koutsodimitropoulos et al., (2015)
 St. Louis et al., (2014)
- 48 How confident are you in your assessment of this persons' marked characteristics in the video? Pellowski (2010)
- 49 How confident are you in your assessment of this persons' clinical diagnosis in the video? Pellowski (2010)
- 50 Present Video of a person who clutters. Farrell, Blanchet, & Tillery (2015)
 Mark the characteristics that apply to the speaker. Yaruss & Quesal (2002)
- 51 (Optional) Why did you select the characteristics you did?
- 52 They are: St. Louis et al., (2010)
 A person who stutters
 A person who has a phonological disorder
 A person who clutters
 They are a typically fluent speaker
- 53 Personality traits of the speaker in the video include: Boyle (2013)
 Koutsodimitropoulos et al., (2015)
 St. Louis et al., (2014)
- 54 How confident are you in your assessment of this persons' marked characteristics in the video? Pellowski (2010)
- 55 How confident are you in your assessment of this persons' clinical diagnosis in the video? Pellowski (2010)

- 56 Is there any additional information you would like to add? Koutsodimitropoulos et al., (2015)
Yaruss & Quesal (2002)