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Scope of *OJMSHA*

The Online Journal of Missouri Speech-Language-Hearing Association is a peer-reviewed, interprofessional journal publishing articles that make clinical and research contributions to current practices in the fields of Speech-Language Pathology and Audiology. The journal is also intended to provide updates on various professional issues faced by our members while bringing them the latest and most significant findings in the field of communication disorders.

The journal welcomes academicians, clinicians, graduate and undergraduate students, and other allied health professionals who are interested or engaged in research in the field of communication disorders. The interested contributors are highly encouraged to submit their manuscripts/papers to msha@shomemsha.org. An inquiry regarding specific information about a submission may be emailed to Jayanti Ray (jray@semo.edu).

Upon acceptance of the manuscripts, a PDF version of the journal will be posted online during August or September. This publication is open to both members and nonmembers. Readers can freely access or cite the articles.

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Research

Editorial Board (Peer Reviewers)

Carol Koch, EdD, CCC-SLP, has been a practicing pediatric speech language pathologist for the past 28 years. She has also taught at the undergraduate and graduate levels for the past 11 years. Her areas of clinical expertise, teaching and research interests include early intervention, childhood apraxia of speech, autism spectrum disorders, early phonological acquisition, assessment and intervention of speech sound disorders, family and sibling experiences, and clinical education. Carol was a recent participant in the ASHA Leadership Development in Health Care Program. She currently has a publishing contract to write a textbook on the topic of speech sound disorders. Carol has also been serving on the Board of Directors for Children's TLC for the past 6 years.

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Hortencia Kayser is a graduate of the University of Arizona and received her doctorate from New Mexico State University. Dr. Kayser completed a post-doctoral fellowship with the University of Arizona's National Center for Neurogenic Communication Disorders where she studied acquired language disorders in children. She has published in the areas of assessment and treatment of Hispanic children with communication disorders and has written 3 books on these topics. Her specialization has been the preschool Hispanic child who is learning English. She has served at Texas Christian University, New Mexico State University (NMSU), and Saint Louis University (SLU). Dr. Kayser was a full professor at NMSU and SLU. She is a Fellow of ASHA and received the Award for Special Contributions for Multicultural Populations.

Victoria Carlson-Casaregola, MA, CCC-SLP, is a school-based Speech-Language Pathologist and university adjunct instructor of advanced writing in St. Louis. She holds a Master's degree in English/ Expository Writing from The University of Iowa and a Master of Arts in Communication Sciences and Disorders from Saint Louis University. In collaboration with SLP colleagues at St. Joseph Institute for the Deaf, she co-wrote *GOALS: A Listening and Spoken Language Guide*. She won First Place in the ASHA 2006 Student Ethics Essay competition.

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Effective Assessment Tools for Feeding, Eating, and Swallowing in Individuals with Down Syndrome

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This systematic review examined the assessment of feeding, eating and swallowing in individuals with Down Syndrome (DS). A comprehensive search of electronic databases included The American Journal of Occupational Therapy (AJOT), Pub Med, Google Scholar and Academic Search Complete. Sixteen articles were found that were directly related to the question. Nine were identified as the best evidence available. Results indicated that a variety of assessment methods were used to determine possible treatment approaches. Types of assessments included (A) interview, (B) questionnaire, (C) instrumental evaluations (e.g., Videofluoroscopic swallow study VFSS), (D) observations (video-tape and direct), (E) oral-motor (skills, questionnaire, assessment), and (F) oral sensory processing. Overall findings suggest that there is inconsistency regarding the ways feeding, eating, and swallowing are assessed in individuals with DS and that parental report plays an important role in the assessment process.

Key Words: Down Syndrome, feeding, swallowing, dysphagia, chewing, breastfeeding, eating, assessment

Overview of Down Syndrome (DS)

Speech-Language Pathologists (SLPs) work with many populations of individuals with special needs. One such population is individuals with Down Syndrome (DS). According to Centers for Disease Control and Prevention (CDC) (n.d.) DS is defined as "a condition in which a person has an extra chromosome" (What is DS section, para 1). The CDC (n.d.) also reported that DS occurs on chromosome 21; approximately 6,000 babies (1 in 700) are born with DS each year (Occurrence section, para 5). Babies have a higher risk of being diagnosed with DS if their mother becomes pregnant at age 35 or older **(**Causes and Risk Factors section, para 5). Swallowing and feeding incidences in children differ from typically developing children to those with developmental disabilities. Typically developing children range from 25-45% while those with developmental disabilities may be up to 80% (Homer & Carbajal, 2015).

Physical Characteristics

A variety of physical problems are associated with DS. According to Paul and Norbury (2012), hallmark features of DS include hypotonia, distinctive facial features such as microgenia, round face, macroglossia, and short stature. It is also noted that individuals with DS are at greater risk for congenital heart defects and recurrent ear infections (p.103). Lewis and Kritzinger (2004) reported that heart defects are identified in about 40% of children with DS. These defects can inherently create more problems with feeding and swallowing varying upon on the general type and severity associated with the heart defect. Excessive perspiration, fast and labored breathing, vomiting, feeding fatigue, inadequate food intake, and limited weight gain can occur (Paul & Norbury, 2012).

Hypotonia, or low muscle tone, is present in the majority of children with DS. According to Kumin and Bahr (1999), a study by Share and French estimated that

hypotonia occurs in children with DS over 95% of the time. Hypotonia can ultimately lead to a variety of problems related to drinking, feeding/swallowing, and subsequently speech. Additional symptoms may include drooling, tongue protrusion at rest, aspiration related to hypotonia of the pharyngeal musculature & its coordination (Kumin & Bahr, 1999). In sum, hypotonia can ultimately lead to a variety of problems related to drinking, feeding/swallowing, and subsequently speech.

Cognitive Characteristics

Despite the brain experiencing several periods of change from birth to later life, cognition remains a concern for children with DS. Research finds that individuals with DS are more likely to develop Alzheimer's disease at an earlier age than are typically developing adults (Edgin, 2013). In addition, the DS population commonly exhibits deficits in working memory, with verbal tasks being more difficult than visuospatial tasks; this in an important hallmark for DS that is not as prevalent in other ID syndromes. Additional areas of executive functioning also adversely impacted include response inhibition, cognitive flexibility, and planning (Paul & Norbury, 2012).

Language

Individuals with DS have problems with language form, content, and use. These factors make it difficult for them to learn and many individuals with DS also experience memory deficits (Edgin, 2013). Because of their impairments in language, most formal scores of overall intelligence tend to fall somewhere between 40 and 70. (Paul & Norbury, 2012). Consequently, researchers also use the term "intellectual disability (ID)" to further classify the presentation of children with DS.

Dysphagia

Individuals of all ages may experience signs and symptoms of dysphagia, however those with intellectual disabilities (ID), which includes people with DS, may be at higher risk. "Although the prevalence of dysphagia in people with ID is unknown, dysphagia, nutritional problems, aspirating pneumonia, respiratory illness and asphyxiation are widely considered to be more common in individuals with ID than in the general population" (Paterson, 2012, p. 140). According to ASHA, dysphagia is a feeding and swallowing disorder that includes "difficulty with any step of the feeding process-from accepting foods and liquids into the mouth to the entry of food into the stomach and intestines" ("Feeding and Swallowing", n.d.). There are four stages of swallowing: oral preparatory, oral transit, pharyngeal and esophageal. During the oral preparatory stages, the individual brings food and drink to the mouth and forms a bolus by chewing, sucking, and manipulating the material in the oral cavity. The oral transit stage involves moving the bolus to the back of the mouth and preparing the bolus for the pharyngeal stage, which then oversees initiation of the swallow. During the esophageal stage, the bolus then moves through the esophagus into the stomach (ASHA, Pediatric Dysphagia).

Dysphagia in individuals with DS may lead to serious conditions including aspiration pneumonia, obesity, malnutrition, upper airway obstruction and possibly dehydration (Paterson, 2012). Persons with DS are born with low tone in facial and swallowing muscles. Therefore, when eating, drinking, and swallowing, these individuals often show decreased ability to move the muscles of the lips, tongue, cheeks, and jaw. They may also have difficulty effectively using the muscles of the pharynx and larynx to initiate a strong swallow (Paterson, 2012). Given the significance of drinking, feeding and swallowing difficulties, caregivers

typically seek out assistance from licensed professionals such as a Speech-Language Pathologist (SLP) who can conduct specialized assessment and intervention for dysphagic individuals.

Roles of a Speech-Language Pathologist

SLPs are responsible for the assessment, treatment, and diagnosis of infants and children with suspected feeding and/or swallowing disorders. Some roles that are considered appropriate for SLPs as decided by the American Speech-Language Hearing Association (ASHA) are as follows: (1) providing education to all individuals including those that work with individuals at risk for pediatric dysphagia, (2) assessing each patient's swallowing abilities by examining his/her anatomy and using clinical instrumentation, (3) determining proper diagnoses and(4) potentially referring the patient to specialized professionals if more extensive evaluation and treatment is needed. (Roles and Responsibilities, n.d.).

It is important to recognize that SLPs are not the sole professional involved in the assessment of feeding and swallowing disorders. A team approach is necessary to ensure the dysphagic patient is being provided the most support which begins by involving the family or caregivers. Others on the team could include an occupational therapist, physician, social worker, physical therapist and a dietician.

To date, there is a paucity of research pertaining to feeding and swallowing in individuals with DS. The purpose of this review is to provide a synthesis of most recent best available evidence of assessment for feeding and swallowing in individuals with DS.

Methodology

Inclusion/exclusion Criteria

The following criteria were used to identify articles related to the question of interest: (a) Individuals had to be diagnosed with DS, (b) Individuals had to be under the age of 18 years old, (c) Studies included individuals with DS from the United States, Italy, and Saudi Arabia (based on the amount of available information for this particular systematic review), and (d) the studies were peer-reviewed articles.

Search Procedures

The following research was conducted on The American Journal of Occupational Therapy (AJOT), PubMed, Google Scholar, and Academic Search Complete. Table 1 provides the results from the multiple database searches. Table 2 presents the ASHA levels of evidence which allows research to be placed into specific categories based on the type of design. The strongest design is a meta-analysis of multiple well-designed controlled studies. (see Appendix A for coding procedures).

Data Extraction/Coding

Each of the studies chosen for this systematic review were summarized into the following categories: (a) participants, (b) purpose, (c) design, (d) assessment type and (e) results. Peer-reviewed articles were included only if the participants of the design had a diagnosis of DS. These individuals also had to present with issues in drinking, feeding, and/or swallowing.

When reviewing the studies, two to five key results were highlighted as they related to assessment. The types of assessments were analyzed and organized into groups to better understand how the studies were similar (see Appendix B for ASHA levels of evidence and Appendix C for quality of appraisal).

Data Analysis

Data were analyzed by coding the best peer-reviewed articles that were available for our review. The researchers determined each article's level of and certainty of evidence. Both researchers read each of the chosen articles and

categorized specific aspects of each study. The individual quality of each study was determined and recorded. Also, ASHA's levels of evidence were used to conclude the accuracy of the articles. The researchers compared a variety of coding procedures and sought out any disparities. In most of the studies, the main research questions tailored what specific drinking, feeding, and or swallowing difficulties individuals with DS had during the assessment process. The pertinent findings were coded and identified in the studies in which multiple assessment tools were implemented (see Appendix D) for evidence analysis.

Results

Numerous types of assessment were used to identify concerns regarding feeding, eating, and dysphagia. Assessment types were as follows: (A) interview, (B) questionnaire, (C) instrumental evaluations (Videofluoroscopic swallow study; VFSS), (D) observations (video-tape and direct), (E) oral-motor (skills, questionnaire, assessment), and (F) oral sensory processing. With regards to what the studies researched specifically, two studies reviewed dysphagia, one study reviewed breastfeeding, and seven studies reviewed concerns related to either feeding, eating, or drinking (see Appendix E for more information on types of assessment).

Nine total studies investigated factors related to feeding, eating, and or swallowing in individuals with DS. Of the studies chosen for inclusion, five examined feeding habits, three examined oral structure's effects on eating, and another three examined swallowing difficulty. Many of the articles focused on multiple areas related to swallowing in children with DS. This review of the literature chose to separate out each of the areas, thus the total number of studies appears to be greater than nine. A total of 1,126 participants were included across studies. Participants included mothers (n=506), families (n=250), children with DS (n=350), and parents (n=20).

Two of the studies focused their research on the pharyngeal phase of swallowing. O'Neill & Richter and Jackson et al. both showed similar results when identifying how many individuals with DS have difficulties during the pharyngeal phase of swallowing. In the findings of Jackson et al research, 56.3% of the participants had difficulty swallowing, while O'Neill & Richter's research showed 57.7%. When considering diet modifications, thickened liquids were recommended most frequently in both studies. O'Neill & Richter explained that "hypotonia, oral sensory motor deficits and cognitive deficits can negatively affect the pharyngeal swallowing function in children" (p.149). Those specific characteristics explain the swallowing difficulties for more than half of individuals with DS.

In the studies conducted by Gisel et al. (1984a), Jackson et al. (2016), Kumin and Bahr (1999), Spender et al. (1996), and Lewis and Kritzinger (2004) low muscle tone was found to negatively influence feeding and swallowing in children with DS. Spender et al. suggested that children with DS displayed "aspects of impaired muscular control or co-ordination". (p 686). Gisel et al. (1984a) found that children with DS spend an excessive amount of time chewing compared to regular peers. Lewis and Kritzinger (2004), discovered that decreased muscle tone can affect the following with infants, "poor lip seal, uncoordinated suck/swallow/breathing/ pattern, and slow swallow reflex" (p 46). Findings in Pisacane et al. study interviewed mothers that reported 21% of infants having difficulty suckling due to low muscle tone as well (p.1480). Overall, Gisel et al. (1984a), Kumin and Bahr (1999), and Spender et al. (1996), demonstrated that low muscle tone has negative implications for feeding and swallowing due to prolonged duration of

feeding/chewing, and weak lip closure resulting in poor suction of lip and anterior bolus control.

Within the studies conducted by Jackson (2016), Gisel et al. (1984b), and Kumin & Bahr (1999), tongue protrusion was commonly attributed to difficulties with eating, feeding, and swallowing. According to Jackson et al. (2016), 13.7% of participants exhibited tongue thrusting. Kumin & Bahr (1999) suggested similar findings: when drinking, 86% of children had protrusion and while chewing foods, 93% of children protruded their tongue. Gisel et al. (1984b), found that "forward movement of the tongue upon swallowing appears to occur with a concomitant increase in softness of food texture." (p 663)

Five studies that were included in this systematic review included parents as part of the assessment process. Parents were included in observations, questionnaires, and interviews. One important finding across several of the studies was *point in time* in which solid food was introduced. Two studies, Al-Sarheed (2005), and Spender et al. (1996) suggested that parents expressed difficulty in introducing solid foods and that many parents introduced solid foods later in the infant's life. Al-Sarheed (2005) found that 103 infants were introduced to solid foods around a mean age of 7.73 months. Spender et al. (1996) included seven mothers who reported struggling when introducing solid foods. These mothers discussed their child's preference for certain textures. Most children preferred puree textures and six stated their child did not like large lumps. Kumin and Bahr (1999) suggested the reason many parents have difficulty with introducing solid foods may be due to specific feeding and swallowing problems such as low muscle tone in lips at rest, spillage during spoon feeding, and inadequately forming a bolus.

Discussions

Clinical Implications

Findings from this systematic review indicate that it is important to consider various professions when assessing clients who exhibit feeding, eating, or swallowing difficulties. This can provide a more in-depth assessment than just relying on SLP knowledge. SLPs work with a wide range of professionals, two of the most prominent being Occupational Therapists (OT) and Physical Therapists (PT). For example, OTs may be involved in the assessment of a children with feeding and eating difficulties. As the SLP is the professional that assesses the patient's ability to safely eat and swallow, an OT assesses the patient's ability to get food and drink to mouth with fine motor skills. PTs on the other hand, may assess specific motor functions of the entire body which is important for SLPs to take note of and be aware of their patient's overall abilities and current deficits. It is crucial to take a team approach when assessing a patient because each professional is educated in his/her area, but we are treating the patient as a whole.

The parent-child interaction is a key factor in improving the long-term progress the dysphagic individual will make given their age. As previously discussed, parents are a member of the team whether they are observing their child, participating in questionnaires or interviews, or simply trying to understand strategies to help their child succeed. For an adequate and thorough assessment of these individuals, parent involvement is necessary.

Limitations

Many limitations were involved in the entirety of this systematic review process. One limitation of these studies is the lack of culture diversity. Most of the studies presented in the research involved middle and upper-class white American children. The two studies that provided

more insight into cultural diversity were conducted in Italy and Saudi Arabia. Another limitation was the age ranges used. Because all the studies used infants and children for their population targets, the entire population of DS has not been thoroughly researched. Assessing age groups beyond 18 would depict what feeding, eating, and swallowing complications these individuals continue to have as they age.

Recommendations for Future Research

It is evident that researchers have given scattered attention to a variety of these topics. Still many questions exist after discovering the different types of assessment that are used with feeding and swallowing concerns in individuals with DS. Future research is warranted based on the quickly changing climate of evidence-based practice (EBP) associated with eating, swallowing and feeding. It would be beneficial to establish a more universal way to assess these individuals to allow for easier collaboration between the medical professions involved. As SLPs, it is imperative that we are providing the best EBP beginning with assessment of dysphagia. This starts with being skillfully knowledgeable about all options available. Finally, additional research into the quality and amount of education provided by SLPs that parents of DS individuals receive with regards to dysphagia assessment and management is also warranted.

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Appendix A

Table A1
Coding Procedures

Database	Keywords	Number of Hits	Best Available Evidence
Academic Search	Down syndrome + feeding	51	1
AJOT	Down syndrome + eating	22	2
PubMed	Down syndrome + feeding	234	2
Pub Med	Down syndrome + breastfeeding	36	1
Pub Med	Down syndrome + swallowing	70	1
Pub Med	Down syndrome + eating	110	1
Google Scholar	Libby Kumin + Down Syndrome	207	1

Appendix B

Table B1
ASHA Levels of Evidence

Citation	Meta-analysis of multiple well-designed controlled studies (1A)	Well-designed randomized controlled trials (1)	Well-designed non-randomized controlled trials (2)	Non-experimental designs (3)	Expert opinion articles (4)
O'Neill, A. C. (2013).			X		
Pisacane, A. (2003).				X	
Lewis, E. (2004).				X	
Gisel, E. G., (1984a).		X		X	
Spender, Q. (1996).		X		X	
Giesel. E. G (1984b)				X	
Al-Sarheed, M. (2005).				X	
Kumin, L. (1999).			X		
Jackson, A. (2016).			X		

Appendix C

Table C1
Quality of Appraisal
Rating Scale 1-3; 3 is highest

Study	Objective Clearly Stated	Literature review Unbiased	Suitable Methods	Adequate Detail Intervention	Reliability of measures described	Sample size sufficient	Clear Results	Generalizability
Lewis, E. (2004).	3	3	3	3	3	2	3	3
Gisel, E. G. (1984 a).	3	3	3	2	3	2	3	3
Spender, Q. (1996).	3	3	3	3	3	3	3	3
Giesel. E. G. (1984 b)	3	3	3	2	3	2	3	3
Al-Sarheed, M. (2005).	3	3	3	2	3	3	3	3
Kumin, L. (1999).	3	3	3	3	3	2	3	3
Jackson, A. (2016).	3	3	3	3	3	3	3	3
Pisacane, A. (2003).	3	3	3	3	3	3	3	3
O'Neill, A. C. (2013).	3	3	3	3	3	3	3	3

Appendix D

Table D1

Evidence Analysis

Citation	Participants	Purpose	Design	Assessment Type	Results
Lewis, E. (2004).	20 parents with young children under the age of four	Describe some of the experiences of a group of parents regarding the feeding problems of their infants with DS	Survey	Questionnaire	○ Parents gave recommendations on how to handle swallowing concerns to other parents ○ Decreased muscle tone affect the following: poor lip seal, uncoordinated SSB, and slow swallow reflex
Gisel, E. G. (1984a).	26 Down's syndrome children were monitored: 14 were 4 years old (8 males, 6 females), and 12 were 5 years old (6 males, 6 females)	Compare chewing cycles of Down's Syndrome children with those of normal preschool children	Survey and Correlational	Videotape analysis-Profile view	○ It was noted that amount of time spent chewing is significantly prolonged per bite of food ○ Low muscle tone was found to negatively influence feeding and swallowing in children with DS
Spender, Q. (1996).	14 children with DS, of whom 13 had trisomy 21 and one had a balanced translocation. Compared to normal children (N=58).	To explore in detail the nature of feeding patterns in a sample of young children with DS attending the only DS clinic in a defined geographical area.	Correlational Study	Feeding Intervention Schedule with Video Observation. Structured interview of feeding and developmental history. Schedule for Oral motor	○ Sequence of oropharyngeal functions necessary to move the food from the lip region into the pharynx is poorly coordinated for puree and solid textures ○ It is suggested that tongue protrusion could be a cause ○ Bolus formed in the mouth would tend to reside in the oral cavity, usually on the anterior portion of the tongue after the child took more food in. ○ 7 mothers struggled when introducing solids ○ Preferences for certain textures: puree foods and 6 did not like large lumps

				assessment. (SOMA),	○ Children with DS displayed aspects of impaired muscular control or coordination.
Gisel. E. G (1984b)	26 children; 14 were 4 years +/- 2 months (8 males, 6 females) and 12 were 5 years +/- 2 months (6 males, 6 females).	To develop a standardized eating assessment for children.	Correlational Study	Diagnostic Evaluation (Direct Observation)	○ Forward movement of the tongue upon swallowing appears to occur with a concomitant increase in softness of food texture
Al-Sarheed, M. (2005).	250 families of children with Down's syndrome in Saudi Arabia from different schools.	"Investigate the current status of breastfeeding and introduction of solid foods for children with Down's syndrome living in Riyadh, Saudi Arabia"	Survey	Questionnaire	○ Majority of infants were weaned between 6-9 months of age with a mean age of 7.73 months ○ Parents expressed difficulty with introducing solid foods
Kumin, L. (1999).	30 children with DS from 8 months-4 years 11 months of age.	"Document and provide information on the processes of feeding, eating, and drinking in children with DS with oral motor concerns"	Descriptive Study- Non-randomized/ Survey	Diagnostic Evaluation, Questionnaire, and Interview based off the Questionnaire.	○ Low muscle tone in lips 44% at rest ○ Drooling noted 41 % at rest ○ Low muscle tone in tongue 80% at rest ○ Spillage 74% in spoon feeding ○ Bites completely through food 63% ○ Low of food while chewing 64% ○ Forms adequate bolus 36% ○ Protrusion with drinking 86% ○ Protrusion with chewing foods 93%
Jackson, A. (2016).	158 children with Down Syndrome (male=95; female=63; mean age=2.10 years SD=3.17). Remaining after review (n=138).	The purpose is to have a clinical understanding and management of dysphagia in children with down syndrome.	Descriptive Study	Diagnostic Evaluation with OT (oral motor skills, oral sensory processing, fluoroscopic	○ 63.8% participants had oral motor difficulties ○ 20.3% had oral sensory difficulties ○ Most common difficulties: closing lips, weak suction of lips, chewing difficulties, and tongue thrusting (13.7%) ○ 56.3% of children had pharyngeal phase dysphagia

				visualization of oral phase)	○ Diet modifications: thickened liquids
Pisacane, A. (2003).	(n=506) Mothers of children with DS.	The purpose of this study was to investigate the feeding habits of children with DS in Italy.	Correlational	Interview and collection of medical records.	○ Mothers reported infants had difficulty suckling due to low muscle tone- 21%
O'Neill, A. C. (2013).	201 patient charts were included in this review. Of out of these charts 116 children with DS were reviewed.	This study aims to describe the incidence, duration, and precipitating factors of PD in a large cohort of children with DS.	Descriptive Study	VFSS	○ hypotonia, oral sensory motor deficits and cognitive deficits can negatively affect the pharyngeal swallowing function in children ○ 57.7% presented with PD

Appendix E

Table E1

Types of Assessment	**Articles**
Pisacane et al. (2003), Kumin & Bahr (1999), Spender et al. (1996)	Interview
Al-Sarheed (2005, Lewis & Kritzinger (2004), Kumin & Bahr (1999)	Questionnaire
Jackson et al. (2016), Kumin & Bahr (1999), O'Neill & Richter (2013)	Diagnostic evaluations (VFSS)
Gisel et al. (1984a), Gisel et al (1984b), Spender et al. (1996)	Observations (Video-tape and direct)
Jackson et al. (2016),Kumin & Bahr (1999), Spender et al. (1996)	Oral-Motor (skills, questionnaire, assessment)
Jackson et al (2016)	Oral Sensory Processing

Speech-Language Pathologists' Perceptions about Collaboration with General Education Teachers and the Academic Success of the Student

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This study seeks to understand the current state of collaborative (interprofessional) practice in a public educational setting from a speech-language pathology perspective. These researchers also explore what enhances and detracts from collaborations between speech- language pathologists (SLPs) and general education classroom teachers, as well as what improvements can be made to the collaborative experience to enhance student outcomes.Two hundred sixty-two school-based SLPs in Missouri participated in an electronic survey related to collaborative practices with general education teachers. Survey respondents revealed that the majority of service delivery is spent in pull-out services, either in small group or 1:1 pull-out. For those respondents who do implement collaborative programming, identified themes including lack of time, diverse caseloads, and caseload size were listed as detractors. While data collection occurs routinely by SLPs, respondents seemed unsure as to the most appropriate data to collect and analyze in a collaborative setting. Implications for practice as well as limitations are discussed as a part of this study.

Keywords: collaboration, workload, interprofessional practice

Currently, over half (53%) of speech language pathologists (SLP) work in the school setting (Where Do Audiologists and Speech-Language Pathologists Work?, 2014). In schools, SLPs regularly work in multidisciplinary teams to problem-solve and provide services to a varied number of students on their caseloads. An SLP's integral partner is the general education classroom teacher. Blosser (2012), Ehren (2000), and Elksnin and Capilouto (1994) agree that the classroom teacher's knowledge and skills regarding the curriculum and education process, as well as daily interactions with caseload students, make this particular expertise essential. To fully utilize both professionals' skills for positive student outcomes, these educators engage in collaborative efforts. For the purpose of this study, collaboration is defined as the act of two or more individuals with corresponding skills cooperating to create a shared understanding that neither had previously had or could have come to on their own (Ehren, Lipson, & Wixson, 2013). Through collaboration, the speech language pathologist and classroom teacher create and implement goals that simultaneously address student's therapeutic and academic needs.

Contrasting Duties of Professionals

Collaboration is influenced by professional priorities within service provision settings. Unfortunately, collaboration is not the sole focus of speech-language pathologists and classroom teachers. SLPs must balance teacher collaboration with responsibilities to other professionals as well as maintaining a therapeutic focus that accomplishes the speech, language and or communication goals of the students (Ehren, 2000). The SLP's attention also contends with time intensive, evidence-based practice within service delivery. The SLP's schedule is strained further by oversized caseloads, caused by the growing serviceable school population not being equally matched by increasing school SLP positions (Ehren, 2000; Harn,

Bradshaw & Ogletree, 1990). Likewise, the classroom teacher struggles to find balance between professional priorities. The teacher must adapt to a changing curriculum governed by Common Core State Standards or a state level equivalent, as well as to the dominating importance of standardized testing (Cox, 2018). On top of the aforementioned factors, teachers are responsible for executing the education process and curriculum (Kelchner, 2018). Thus, the classroom teacher's attention, too, is drawn from collaborating with the speech language pathologist.

Impact of Priorities and Perceptions

Competing priorities influence the perceptions SLPs and classroom teachers hold towards each other, causing ramifications to the collaborative process and overall success of the shared student. Each professional perceives each other's roles differently in the service of their mutual students' needs. Examples of conflicting perceptions can be found in the research of Elksnin and Capilouto (1994) and Shaughnessy and Sanger (2005). While some SLPs perceive that one role should be to engage all aspects of language within the curriculum, some classroom teachers perceive the instructor's role as to dictate the aspects of the curriculum to be addressed by the SLP in therapy (Shaughnessy & Sanger, 2005). This example, though, is potentially non-representative of the contemporary perceptions speech language pathologists and classroom teachers hold towards each other. Without a more current research effort, one cannot be certain.

Identification of the Problem

More research on the professional relationship between SLPs specifically and classroom teachers is needed in order to build on the literature currently available in this area. While researchers have addressed collaboration in recent publications, this construct has been addressed in a more generalized way by including SLPs with other special educators. The assumed status quo is that this research is adequate to inform speech-language pathologists on how to collaborate in the classroom. Bauer, Iyer, Boon and Fore (2010) and McLeskey et al. (2017) provide "tips" for classroom teachers and special educators in general to achieve good collaboration (e.g., good listening skills, brief yet detailed communication, consideration of cultural diversity when co-planning, honesty, creative problem solving, etc.), but not for the speech language pathologist specifically. Likewise, it is not always clear as to the purpose of collaboration, especially if it is mandated by one's school district (Welborn, 2012). This top-down approach leads to questions such as will collaborative efforts help to close an achievement gap? Will efforts enable students to improve specific literacy skills or math skills? Will efforts assist in service delivery for large caseloads of students? Moreover, the current research also does not address modern factors, such as contemporary professional priorities, constraints within the present classroom and school environment, as well as ever-changing state standards impacting the overall education process. This limited and, at times, broad in scope research leaves both the SLP and the classroom teacher with narrow modern perspectives to educate themselves.

Research Questions

To address the need for current research on the collaborative relationship between speech-language pathologists and classroom teachers and its impact on the academic success of mutually serviced students we posed the following research questions: What currently enhances and detracts from successful collaboration? What are the SLPs' practices and beliefs of collaborating with classroom teachers, and how greatly do they impact service delivery? Can we improve thecollaborative experience to better serve the student, and

if yes, how? The study will aid both professions in understanding how this combination jointly impacts students, and how to provide the best services in spite of modern-day challenges in the education. By expanding the scope of current research, these authors believe that the findings can improve professionals' abilities to collaborate and to create and accomplish goals that holistically service students.

Method

Recruitment

The participants in this study are either currently employed by public school districts in Missouri or have retired from public school districts in Missouri. Initially, the researchers piloted the study and worked with a significantly smaller sample of speech-language pathologists. A combination of purposive and convenience sampling was used to select participants for the current IRB-approved study. According to Shank, Brown, and Pringle (2014), these sampling strategies are two commonly used methods for qualitative research. Purposive sampling consists of persons who have unique backgrounds (in the case of this study, school-based speech-language pathologists) that make them appropriate for current study. Likewise, convenience sampling pulls from a larger population that is conveniently available to the researcher (Gay & Airasian, 2000). Following the study, the primary investigator used the state speech-language organization's list serve with its permission and the state organization sent out surveys electronically. Consent was obtained via an implied consent form that was embedded in the introduction to the online survey, and participants were advised that continuing with the survey indicated consent.

Online Survey

An online survey was created to be distributed to SLPs (see Appendix for survey questions). The survey was open for two weeks. One week after the survey was emailed, participants received a reminder email to complete the survey.

Closed set responses gathered non-identifying demographic information pertaining to levels of education, grade level placement, number of years in the field, caseload sizes, time spent in specific therapy settings, and most frequent types of services provided. Two additional closed set responses were created that listed factors impacting collaborative relationships previously identified in the literature (Ehren, 2000; Welborn, 2012) to measure the literature's relevance in understanding and discussing this contemporary issue. These factors will be described in further detail in the discussion section and refer to questions 10 and 11 in the Appendix.

Participants

The majority of respondents (n = 149) are employed as elementary-level SLPs, followed by 68 middle school-level SLPs, with the smallest number of respondents, 45, being high school-level SLPs (see Figure 1).

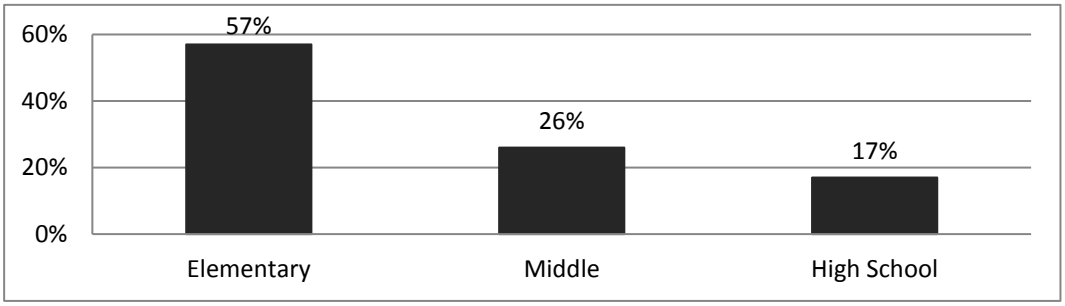

Figure 1. Work setting by level

Of those participants responding to the survey regarding educational level, 102 hold a Master's degree + 30 hours. Speech-language pathologists who hold a Master's degree and a Master's degree + 15 hours are the next largest groups (n = 81 and n = 79, respectively) (see Figure 2).

With regard to number of years in the field, the sample was represented by SLPs who had numerous years of experience (M = 11.22, SD = 7.98). The majority (n = 152) of speech-language pathologists reporting have greater than 11 years of professional experience. Almost identical numbers of respondents are employed for six to 10 years (n = 58) and zero to five years (n = 52), respectively (see Figure 3). The gender of each respondent was not a part of the collected data as the research questions were not specifically related to gender differences with regard to collaboration in the educational setting.

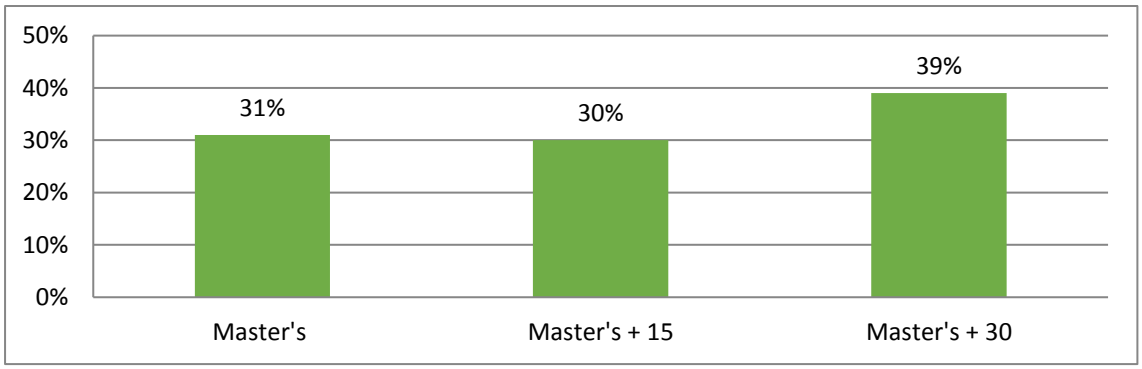

Figure 2. Level of education of participants.

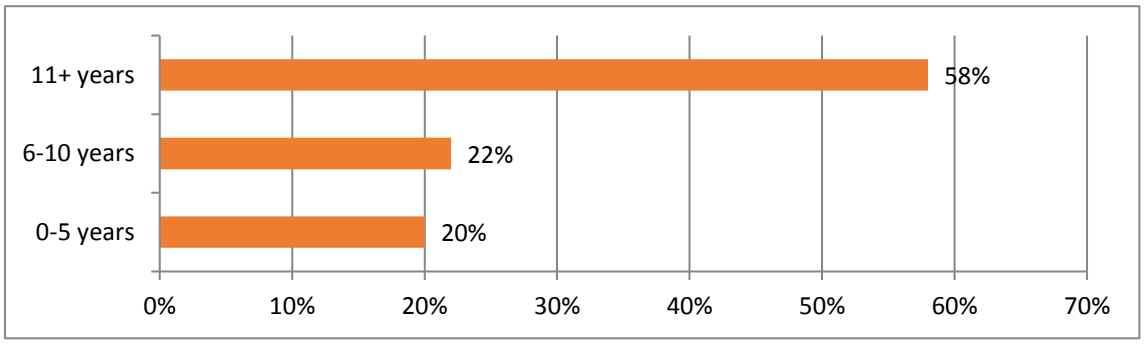

Figure 3. Years of experience of participants.

Results and Discussion

Survey results yielded data on caseload size, types of services provided, and service settings. Regarding caseload, the American Speech-Language-Hearing Association (2018) does not hold to a specific policy or formula to determine appropriate caseload size. According to the Missouri Speech-Language-Hearing Association (2018), there no longer exists a mandatory caseload minimum or maximum. The range of caseload sizes reported is seven students to 65 students. The majority of caseloads (58%) fall between 21 and 40 students. For those respondents whose caseload is 20 and below, some, but not all, indicated that the reason their caseload is small is due to being a part-time SLP. Figure 4 shows how caseload sizes are represented by percentages across the state.

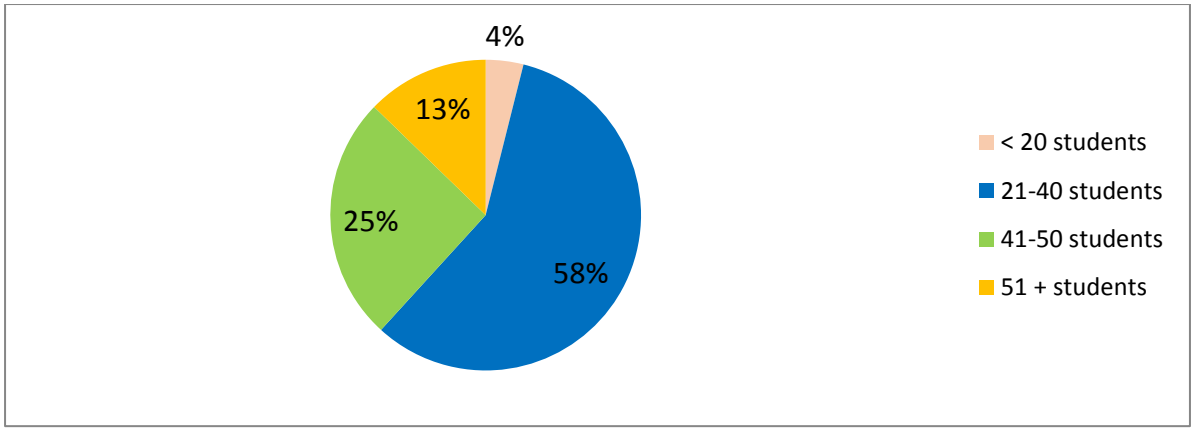

Figure 4. Caseload size.

Of these SLPs, a majority of time is spent delivering language (88%) and articulation (69%) therapy services. This is true regardless of whether the SLP works in the elementary or secondary setting. This statistic is significant, for the types of individuals who require language and articulation services are most likely to possess diagnoses that greatly impact their ability to participate and access the curriculum fully in a mainstream classroom setting. As well, the types of activities and topics that compose language and articulation therapy often reference the serviced student's curriculum, requiring active and continual monitoring of curriculum requirements and pacing of classroom instruction to keep therapy activities applicable and relevant to the student (Missouri Department of Elementary and Secondary Education, 2018; Ritzman, Sanger, & Coufal, 2006; Staskowski & Rivera, 2005). However, with regard to the setting in which SLPs spend the most time providing services, survey responses demonstrate that SLPs often do not get to casually observe the curriculum and students' progress in accessing it.

Participants were asked to rank their service provision settings from most amount of time spent to the least amount of time spent in a respective service provision setting. All SLPs state that the majority of service time (70.15%) is spent in small group pull-out services. This is followed next by 1:1 pull-out services (55.97%). The least amount of time in terms of service provision is in a separate full day classroom setting in a general education building. Full classroom co-teaching is where SLPs spend the second to least amount of time (see Table 1).

Interestingly, the aforementioned setting provides the greatest opportunity to observe student curriculum success regarding articulation and language skills, as well as monitor curriculum pacing. For the purposes of this study, co-teaching is operationally defined as a service delivery model in which two educators (in this case, the SLP and the general education teacher) contribute to instruction in the general education setting. This includes planning, implementation and evaluation of instruction (Friend, 2016). Though these percentages may appear insignificant, this number does not consider those individuals who ranked co-teaching as where they spend the second least amount of time. When the above is considered, these numbers rise significantly, with 79% of SLPs spending little to no time in a classroom co-teaching setting. With increasing caseload sizes dominated by services that require the SLP to have a continually updating working knowledge of the general education's curriculum and expectations, this large absence of time spent in the general education classroom becomes a significant factor that negatively impacts the viability and success of collaboration.

Table 1. *Time spent in each service setting (rank order).*

Service Delivery Setting	Most (Rank 1)	2nd Most (Rank 2)	Next to Least (Rank 5)	Least (Rank 6)
1:1 pullout	16.42% (*n* = 30)	55.97% (*n* =103)	4.48% (*n* = 8)	2.99% (*n* = 6)
Small group pullout	70.15% (n =130)	20.90% (*n* = 39)	2.99% (*n* = 6)	0.00% (*n* = 0)
Separate full day classroom setting in a general education building	3.73% (n = 7)	3.73% (*n* = 7)	16.42% (*n* = 30)	52.24% (*n* = 97)
1:1 push-in to a general education classroom	0.75% (*n* = 1)	9.70% (*n* = 18)	16.42% (*n* = 30)	2.99% (*n* = 6)
Small group push in to a general education classroom	2.24% (*n* = 4)	9.70% (*n* = 18)	17.91% (*n* = 33)	4.48% (*n* = 8)
Full classroom co-teaching model	6.72% (*n* = 12)	2.99% (*n* = 5)	41.79% (*n* = 77)	37.83% (*n* = 70)

Closed Response: Factors Previously Identified

Two closed-response questions were crafted to address factors previously identified in the literature as having an impact on service delivery in the collaborative environment (Ehren, 2000; Elksnin & Capilouto, 1994; Harn, Bradshaw & Ogletree, 1999). These questions were posed to understand what remains viable of the dated literature. The first question asked respondents to identify those factors that negatively impact service delivery such as i) caseload size; ii) diverse educational diagnoses on the SLPs' caseload; iii) time and scheduling (the factor with the most significant impact); iv) progress monitoring and standardized assessments; and v) a greater focus on the providing direct instruction for the curriculum (i.e. tutoring) vs. support in the curriculum (see Figure 5). The second question asked respondents to identify those factors that negatively impact collaborating with general ed. staff such as i) staff willingness to collaborate; ii) understanding the roles of both professionals in the collaborative model; iii) philosophical differences about collaboration; and iv) time (see Figure 6). These responses demonstrate that a majority of currently identified factors are applicable to an extent. There does not appear to be as much variance between the collaboration factors as those that impact service delivery. These data both complement and are complemented by

open response questions later addressed. These data are utilized to demonstrate both qualitative and quantitative trend agreement regarding the collaborative experience between SLPs and general education teachers and staff.

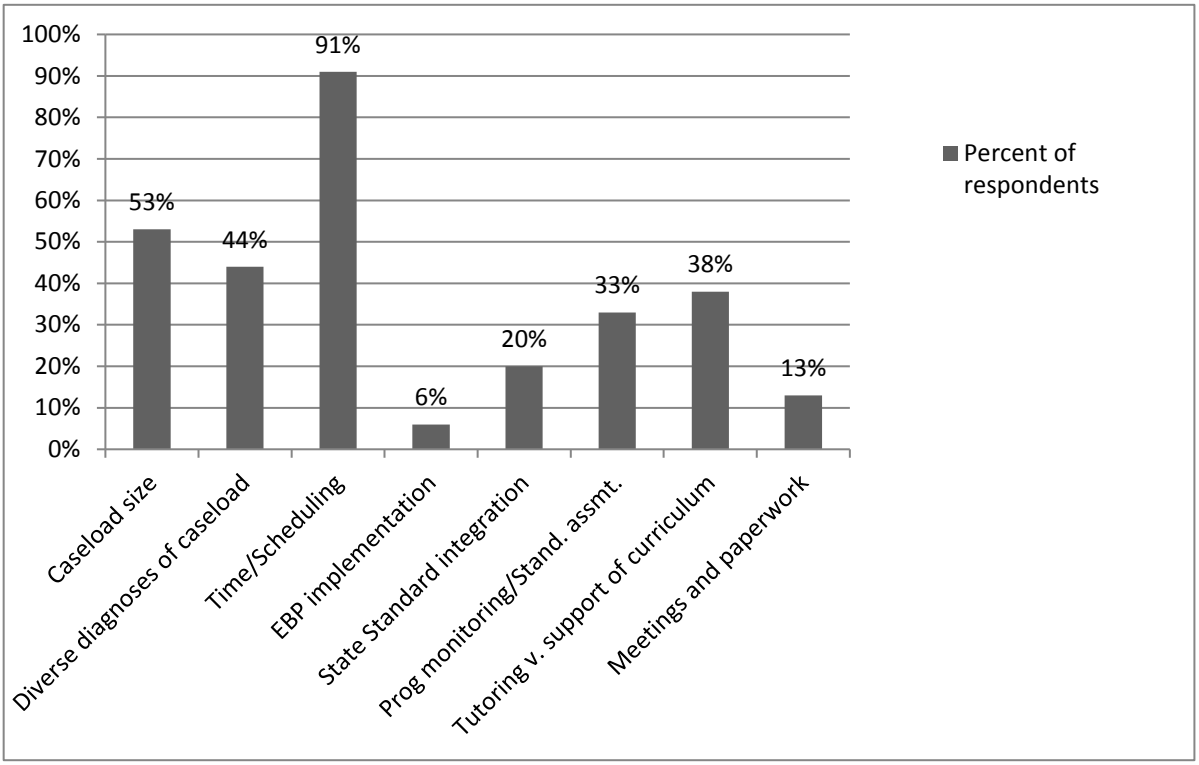

Figure 5. Factors negatively impacting service delivery.

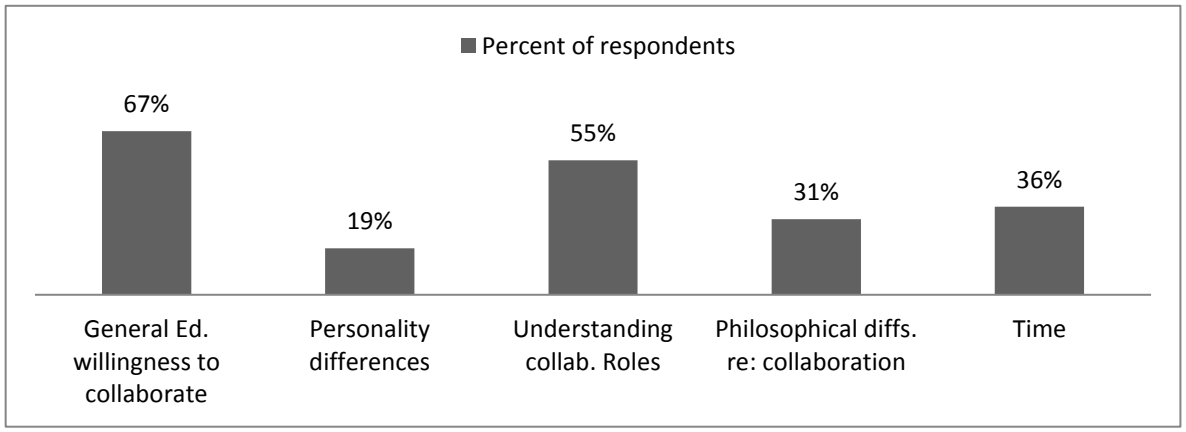

Figure 6. Factors negatively impacting collaboration with general education staff.

Open Response: Current versus Ideal

The first series of open response questions on the survey address descriptions of the SLPs' current and ideal collaborative relationships. The prompts asked the participants to describe an ideal collaborative experience, to then describe why this current experience is not ideal, and finally to state what changes might bring the current experience closer to ideal. While these responses consider the entire respondent population in all school level settings, it is important to note that not every participant chose to answer the open response items. In fact, only 10 percent (n = 26) respondents answered all of the open response items. This will be discussed further in the limitations section.

Concrete repeating themes are observed for all previously mentioned

questions. In describing an ideal collaborative relationship, participants focused on four topics: i) structure and relationship; ii) co-teaching; iii) planning and implementation; and iv) collaborative attitudes (see Figure 7).

SLPs stated that having a weekly mutual planning time, consistent communication in both frequency and type (i.e. email, face-to-face conversations), and both parties holding respect and trust for the other are necessary for the collaborative relationship to have structure. Respondents seemed to hold different ideas about what co-teaching and collaboration are. For example, respondent "A" said that collaboration was "working together to see the whole child and making sure that carryover is consistent from each setting; making sure that materials that are being struggled on in the classroom are shared with the SLP and in return communication to the teacher about strategies that are working in a small[er] setting so some consistency in the larger setting can occur." Likewise, Respondent "B" took a more traditional stance on his/her view of collaboration, indicating that it entailed "allow[ing] for both teachers to teach and run the classroom together. These two views align highly with Beninghof's (2012) duet model of collaboration. Respondent "C" indicated that collaboration was "the teacher being open to suggestions from me regarding appropriate level of work and language level for assignments; I would be able to come into the classroom once a week or once every two weeks and do small group work with students after the classroom teacher had presented her mini-lesson." This view theoretically aligns closely with the push-in model of co-teaching by Friend and Cook (1996).

Without a common language to discuss co-teaching and collaboration within the classroom, an unintended consequence could be difficulty maintaining consistent dialogue amongst all parties regarding collaborative efforts, which could lead to miscommunications that hurt the overall collaborative process.

Building off of a structured collaborative partnership, co-created plans and sharing relevant info within a reasonable time frame were stated as vital elements to successful execution of planning and implementation. Overarching all aforementioned components of an ideal collaboration, the attitudes towards collaborating need to be centered on working as a team and focusing on the student and co-created plan rather than the other professional involved. Thus, a student-oriented team approach is critical to the success of collaborative efforts. Regarding current collaborative experiences, the SLPs discussed both why the current situation is not ideal, and what changes would make it such. Participants consistently claimed that collaboration was underperforming due to the following six factors: i) teachers' misunderstanding the roles and capabilities of the SLP, ii) perceived unwillingness from teachers to share classroom time and space, iii) teachers' differing beliefs and attitudes towards the special education process, staff and students, iv) not enough time and common planning periods with collaborative partners, v) too many responsibilities and duties external to the collaborative effort for both SLPs and teachers, and vi) lack of administrative support.

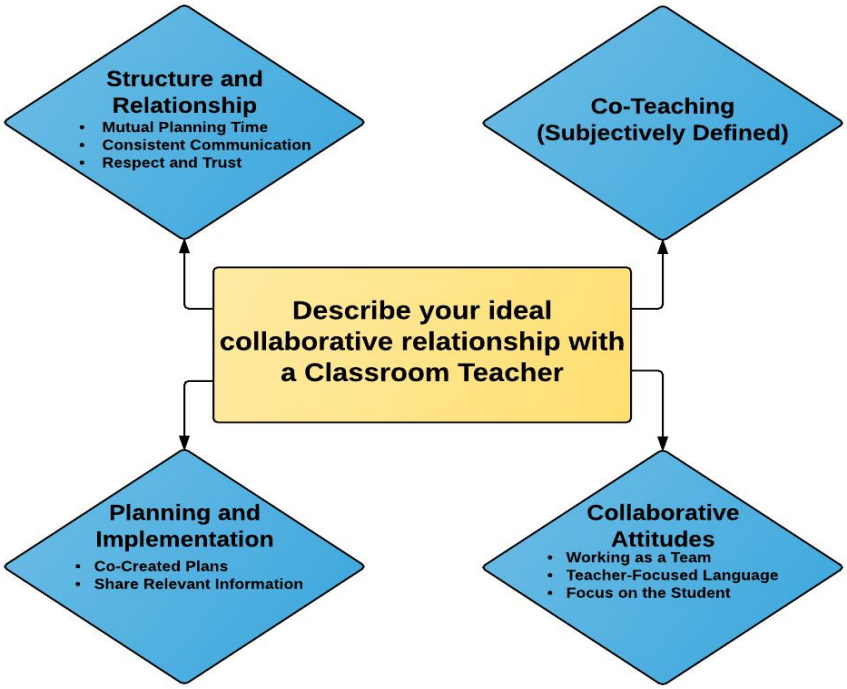

Figure 7. Ideal collaborative relationship themes identified.

Open Response: Evidence and Data

The second series of four open response questions address the data and evidence collected that support the respondents' observed success in either independent service delivery (SLP only) or in collaborative experiences (SLP and general education staff). The field of speech language pathology has a consistently growing emphasis on evidence-based practice in all settings. These questions attempt to understand how the SLP approaches data and evidence to support personal efforts to engage in collaboration, as well as support the continuation of currently existing collaboration.

Question #12 asks what data the SLP collects that demonstrates their collaborations are making a positive impact on student(s). Only a small percentage (24%) of the respondents were able to provide such data, along with an explanation of how it demonstrates the success of collaborative efforts. The following data were consistently identified as evidence demonstrating collaborative success: i) assessment of performance; ii) daily data collection; iii) teacher and student observation; and iv) response charting. Regarding survey responses, it is important to note that 22% of respondents did not know how to answer the question, while 50% of respondents provided data that showed student progress or success but could not explain how it demonstrates the success of the collaboration. Due to the lack of consistency in survey responses, one can only speculate that the identified forms of data can definitively be used to demonstrate success.

Question #13 follows a similar format to question #12 in asking the SLP what data are collected which demonstrates that individual efforts (SLP only) are making a positive impact on the student(s). This question was asked to observe if SLPs identified different types of data that support individual efforts versus the data that supports collaborative efforts. The forms of data consistently identified were i) progress monitoring of

IEP and curriculum goals, ii) standardized assessments at multiple levels (district, state, etc.), iii) online evaluation systems, iv) daily data collection specific to therapy, v) benchmarking, and vi) formative and summative curricular assessments. The identified forms for SLP-only success are not inherently different from those identified to support collaboration.

Question #14 addresses if the SLP perceives there is a difference in the level of success achieved in collaboration versus SLP only service delivery (see Figure 8). The SLP was further asked to state what components made a specific service delivery style more successful, and then explain why. There was a variety of answers collected, with some SLPs experiencing greater success in collaboration, others having greater success in individual service delivery, and then some stating equal success with both service delivery models. The component SLPs identified that what made collaboration more successful was that it allowed for greater consistency and carryover of strategies and skills in all settings of the student. The components identified that made SLP-only service delivery more successful was that the SLP had greater control over the environment, that there is not enough time to effectively collaborate, and it is too difficult to work in the general education setting as it currently stands. The respondents were not able to answer *why* these specific components made these service delivery styles more effective. The responses consistently demonstrated uncertainty in how to appropriately respond, with 38% of responses stating, "I am unsure how to respond." This lack of consistency requires acknowledgement that identified trends in survey responses are speculative as they stand.

Question #15 builds off of question #14 in asking the SLP to identify data that supports his/her response to the previous question. Sixty-four percent of respondents reportedly were uncertain how to answer the question, or that there are no current data to support answers to question #14. Due to the lack of clarity and inability to answer, question #15 is rendered invalid.

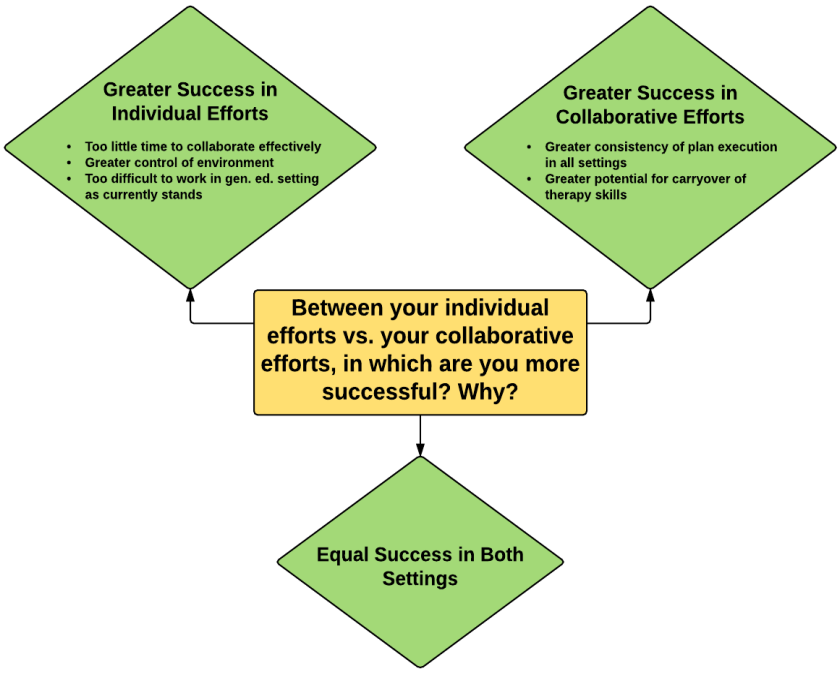

Figure 8. Perceptions of success in individual vs. collaborative settings.

Open Response: Dialogue Continuation

The survey contained a final question asking for the SLP to add any remarks or comments not yet expressed. The replies of the survey respondents stated there needs to be continued establishment and expansion of dialogue about collaboration amongst both general education and special education staff. An appreciation and desire to continue the conversation regarding collaboration were expressed, especially in order to both establish lines of communication between collaborative partners and continuously define and evaluate the roles of the partners in the collaborative relationship. This finding is supported by the work of Conderman, Johnston-Rodriguez, and Hartman (2009) and Dieker and Murawski (2003). The participants of the study felt the questions guided beneficial personal reflection on the topic of collaboration, and they desired to experience these benefits on a larger stage with general education and special education collaborative peers. The notion of reflective practice, particularly in an educational setting is not a new construct. This finding is supported by the work of Darling-Hammond (2006), Osterman and Kottkamp (1993), and Sellars (2012).

Conclusions

Several conclusions were made as a result of the survey. Foremost, there is a need for more dialogue and improved professional development regarding collaboration where all parties are involved. Current professional development and observed lines of communication are inadequate to address big picture questions such as clearly defining roles within collaboration, how to collect data as supporting evidence for the success of collaborative efforts and disseminate both professional parties' ambivalent and negative attitudes toward the collaborative process. Conderman, Johnston-Rodriguez, and Hartman's (2009) as well as Dieker and Murawski's (2003) research support this conclusion. Regarding roles, another conclusion is that there is no consistency or certainty in how to establish roles for both collaborating parties within the classroom environment for push-in services. Friend (2016) notes that "care must be taken by co-teachers to outline roles and responsibilities so that both professionals have meaningful roles capitalizing on their strengths" (p. 3). Administrative support and guidance have been identified as a potential solution, though with no conclusive statements regarding what said support looks like. Friend's (2016) and Murawski and Bernhardt's (2015/2016) research support the need for ongoing administrative support for collaborative teaching efforts.

In discussing data collection, it is evident that the SLP is aware of the need to collect data to support the vitality of collaborations. However, it is uncertain what these hard data should look like, and how to consistently maintain data recording procedures amongst all collaborative partnerships. For example, standardized achievement test data are available in most schools; however, those data are not reflective of immediate changes in student performance over a short period of time (Lingo, Barton-Arwood, & Jolivette, 2011). Alberto and Troutman (2006); Kerr and Nelson (2006) and Sulzer-Azaroff and Mayer (1991) have presented a variety of ways for educators involved in collaborative models of instruction to collect more formative types of data that reflect how students are responding to the instruction that is occurring in the co-taught setting. These methods include but are not limited to teacher notes/anecdotal recording, student work samples (i.e., portfolio assessment), event recording (looking at the frequency of a behavior in a given timeframe or the rate to complete a task), and interval, duration and latency recording. Given the aforementioned methods of collecting formative data in a collaborative setting, the SLP may still struggle to utilize the

qualitative data in a meaningful way. The quantitative data collection methods mentioned seem more directed at measuring observable behavior-related goals and would possibly require creativity on the SLP's part to appropriately measure speech and language goals that are being implemented in the general education setting.

These conclusions demonstrate that there was both a great need for these questions to be asked amongst this population of SLPs, and that there is an even greater need for the same types of questions included in the study to be asked amongst SLPs across the country. The conclusions gathered from this study testify to the desire amongst SLPs to better understand how to most fully participate and support collaboration amongst education-based peers within all school settings.

Regarding the research questions, all questions were answered either partially or fully in this study. Consistent and frequent communication amongst collaborative partners, "buy in" and willingness form both parties to participate in the collaborative process and sharing relevant information within reasonable time intervals were all identified as enhancing collaborative success. On the other hand, time, scheduling, lack of understanding of roles and responsibilities of both parties, perceived unwillingness to fully engaged in collaboration, lack of administrative support, and lack of knowledge of the collaborative partner's skills and expertise were identified as detracting from successful collaboration. SLPs' beliefs and practices on collaborating with classroom teachers consistently leaned towards optimism, though the classroom teacher and environment need to change for complete success, with limited to no discussion of change on the part of the SLP. The language was consistently biased against teachers and general education as a whole as being the main sources of the struggle in collaborating. Though factors that were out of the control of the SLP towards improving collaboration were frequently labeled as hindering the collaborative process, the SLPs held optimistic outlooks for greater future success with current and potential partners. SLPs believe collaboration can be improved by continuing to increase the dialogue between general education and special education professionals. This simple effort towards more talking can result in demystifying each other's roles, strengths and weaknesses in collaboration, as well as establishing efficient and effective lines of communication to be utilized during real time collaboration efforts. Overall, the answering of the study's questions reinforces in the primary investigators the optimism that improving communication amongst collaborative partners across disciplines can have a revolutionary impact on the collaborative success of both general education and special education professionals.

Limitations

There were limitations to the study. The survey population sample size, 262 respondents, is small and limited by geographical location (only one state included in the survey) and the amount of time the survey could be active. Within the survey itself, question #15 was rendered invalid due to confusion about what was being asked and will have to be corrected in future replications or advancement of research on the topic. Moreover, only small percentages of respondents replied to the open-ended questions. In continuation, the participant focus was also narrow, as only SLPs and no general education faculty and staff were invited to participate in the study. In order to triangulate and strengthen the data, follow-up interviews with survey respondents would have been beneficial. However, since the survey was anonymous, this was not possible. Perceptions of the SLPs solicited may differ from actual practice, as the SLPs

were completing the survey within a specific mindset that may not reflect their mindset in day-to-day collaborative settings. As well, the responses collected are perception data, and must be understood as potentially containing biases of the analysts and respondents.

Implications for Future Research

There are several paths that need to be explored in order to better understand the current state of collaboration within education on the whole, rather than simply from the perspective of the SLP. First, the current survey questions need to be corrected in order to remove potential confusions about what is being asked of the respondents as well as potentially reduce the amount of time required to complete the survey. After these revisions to format, and not content, the survey should be presented to classroom teachers, with the results utilized to compare perspectives and perceptions with increased validity and accuracy. The survey can also be used to potentially investigate additional professions involved in collaboration in general education settings. Finally, investigation needs to occur regarding how to improve dialogue amongst collaborative professionals, how to alleviate time-based obstacles greatly hindering effective collaboration, and how to formulate professional development opportunities that addresses both general education and special education professionals' needs regarding collaborative support and communicative growth amongst disciplines.

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Appendix
Survey Questions

1. What level of students do you currently serve in the school setting? (select all that apply)
   A. Elementary level (K-5th or 6th grade)
   B. Middle School level (6th or 7th-8th grade)
   C. High School Level
2. What is the highest level of education you have up to this point?
   A. Master's degree
   B. Master's degree + 15 hours
   C. Master's degree + 18 hours
   D. Master's degree + 30 hours
   E. Educational Specialist Degree (Ed.S.)
   F. Ph.D. or Ed.D.
   G. Other (please specify_____)
3. How long have you been in the field of communication sciences and disorders?
   A. 0-5 years
   B. 6-10 years
   C. 11 + years
4. What is your caseload size currently?

5. The majority of my services are devoted to which type(s) of therapy? (Select up to two) [Therapy setting will be discussed in a separate question.]
   A. Language therapy
   B. Articulation therapy
   C. Fluency therapy
   D. Voice therapy
   E. Working with students with AAC devices
   F. Aural Rehab with Deaf/Hard of Hearing
   G. Other (please specify_____)
6. Rank the time spent in each service delivery setting, 1 being the most and 6 being the least:
   1:1 pullout
   Small group pullout
   Separate full day classroom setting in a general education building
   1:1 push-in to a general education classroom
   Small group push in to a general education classroom
   Full classroom co-teaching model
7. In a perfect world (your desired state), what would your collaborative relationships with general education staff look like? (open response)
8. If the above is not your reality (i.e., your current state), why do you believe this is so? (open response)
9. What feasible innovations/changes would you like to see to move you to your desired state? (open response)
10. What factors negatively impact service delivery (select all that apply)?
    A. Caseload size
    B. Diverse educational diagnoses of my caseload
    C. Time/Scheduling
    D. Evidence-based practice implementation (research-based strategies)
    E. Integration of state standards into therapy and the IEP
    F. Progress monitoring/standardized testing (formative and summative assessments)
    G. Focus on direct instruction of the general education curriculum vs. s*upporting* the curriculum
    H. Other (please specify _____)
11. What factors negatively impact your collaboration with general education staff (including assistants, gen ed teachers and/or administration)? (select all that apply)
    A. Willingness of the general education staff to collaborate

B. Personality differences (rapport)
C. Understanding of respective roles in the collaborative model
D. Philosophical differences about collaboration
E. Other (please specify _____)

12. What data that you collect show you are making a positive impact in the collaborative environment in which you work? (open response)
13. What data overall is collected that show you are making a positive impact regarding student achievement? (open response)
14. If there is a difference in your success levels between the collaborative effort and overall, why might this be? (open response)
15. In reference to the previous question, what data are collected that would show these differences if there are any? (open response)
16. Is there any additional information you wish to share about your collaboration with the general education staff that was not addressed in previous questions? (open response)

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