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Dysphagia Management in the Public-School Setting: The Education and  
Training Needs of Public-School Speech-Language Pathologists

by  
Natalie P. Neubauer

Submitted in fulfillment of the requirements for the degree of

Doctor of Education

Department of Education Leadership Management and Policy

December 2019

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COLLEGE OF EDUCATION AND HUMAN SERVICES  
**SETON HALL UNIVERSITY**

**APPROVAL FOR SUCCESSFUL DEFENSE**

**Natalie P. Neubauer** has successfully defended and made the required modifications to the text of the doctoral dissertation for the Ed.D. during this **Fall Semester 2019**.

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## ABSTRACT

Over the past two decades, the number of children who have dysphagia attending public schools has increased significantly. Because more students with special needs are requiring these services, providing dysphagia management exclusively in the medical setting has become a thing of the past. With this transition, public-school SLPs need to be prepared and confident to provide this service should they encounter a child on their caseload with feeding and swallowing issues. The few studies that have been done up to this point have revealed concerns regarding gaps in training and overall confidence of SLPs to perform this function in the public school. However, no recent studies have identified trends in the types of dysphagia tasks that public-school SLPs are responsible for nationally or measured the confidence these SLPs possess to engage in each feeding and swallowing activity. Furthermore, unanswered questions remain as to the type and degree of education and experience that public-school SLPs have with dysphagia. This information is vital to understanding the current dysphagia training needs of SLPs to safely and efficiently provide this service for their students.

This quantitative survey with a cross-sectional design explored these missing elements in the research by answering the following questions:

1. What are the roles and responsibilities of SLPs regarding feeding and swallowing (dysphagia) in public schools?
2. Do roles and responsibilities in feeding and swallowing (dysphagia) management vary by school or location?
3. Are there specific clinical competencies within the scope of school-based dysphagia management that SLPs report having less confidence with for which they may need more training?

4. Is there a relationship between demographic and professional experience characteristics and levels of perceived confidence in the dysphagia clinical competency areas?
5. What is the nature of the relationship, if any, between the demographic and professional experience characteristics of public-school SLPs and levels of perceived confidence in the dysphagia clinical competency areas?
6. Are there significant differences in confidence levels across the dysphagia clinical competencies between SLPs who do dysphagia management in schools and those SLPs who do not?

The study outcomes have profound implications for public-school SLPs and their educational administrators across the United States. The findings highlight specific gaps in public-school SLPs' dysphagia coursework and clinical training. They also highlight trends in low levels of confidence across dysphagia management tasks that SLPs in public schools are responsible for and that positive correlations exist between professional experience in feeding and swallowing and confidence to perform dysphagia management functions. These data provide clear direction as to what future education and training in dysphagia should include for public-school SLPs who provide feeding and swallowing management and those who do not.

*Keywords:* feeding and swallowing, dysphagia, children, public-school, speech-language pathologist, training needs, education needs, roles and responsibilities, administrator support, educationally-relevant

## DEDICATION

To my parents, Eydie and Allan—your life lessons of dedication, hard work, and striving to be the best version of yourself have encouraged me to pursue my dream of obtaining this doctoral degree.

To my sister Brittany—thank you for being my inspiration, believing in me, and offering ongoing encouragement and support during this pursuit.

And to my husband, Corey—your support and love have been endless. Thank you for being my rock throughout.

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I have always had a thirst for learning, and I am grateful to have had this opportunity to bridge my passion of speech-language pathology with my love of education and leadership. Through this experience, I have grown more than I could have ever imagined, both professionally and personally. Now possessing this powerful skill set in educational administration, I look forward to using these new tools in the next phase of my career to prepare future leaders and enhance the quality of education for my students and those in the community they serve. This started out as a simple dream and future goal in life, and I am now proud to call this one of my greatest achievements. Thank you to all who have paved the way for my successes, giving me the gift of knowledge and forever molding me into a better educator, researcher, and person. You are all recognized and deeply appreciated.

First and foremost, I want to thank my dissertation committee of Dr. Gerard Babo, Dr. Luke Stedrak, Dr. Daniel Gutmore, and Dr. Nina Capone Singleton for helping me to realize my potential in higher education and research, which means I could have an impact in both the field of education and speech-language pathology. I am blessed to have been supported by such invaluable mentors, who have been extremely generous in sharing their expertise and time and providing me with unwavering dedication and support throughout this entire journey. I came from a different background to the field of speech-language pathology, and I began my doctorate in education as a novice. Through the teaching and guidance of this team of leaders, I am grateful to now call myself an expert. I could not have asked for a more positive experience in my pursuit of achieving this degree and appreciate the many ways you have touched my life.

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What a true inspiration you have been to me, Dr. Nina Capone Singleton. To be able to learn from a champion in my area of research has been the greatest gift. Thanks for always being

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It is with great pride that I thank my mom and dad, Eydie and Allan Glass. You have always instilled great values in me and have taught me that I can achieve whatever I set my mind to. I have learned the importance of diligence and never giving up no matter how hard something might be. Thank you for always pushing me to achieve my potential and for being some of my biggest fans. Mom, I did it! We finally have a Dr. Glass in the family! And, to my sister, Britt, thank you for always being there for me and being my best friend. I am the luckiest to have such an amazing sister to share my life accomplishments with.

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## CHAPTER 1

### INTRODUCTION

A national school survey conducted in 2016 by the American Speech-Language-Hearing Association (ASHA) revealed that 10.5% of speech-language pathologists (SLPs) work with dysphagia in public schools. Of this total population, 22.8% provide feeding and swallowing management services in public day and residential programs and 12.9% in preschools (ASHA Schools Survey Report: Summary Report, 2016). Thus, public-school SLPs need knowledge and skills in dysphagia management to appropriately evaluate, diagnose, and provide therapeutic services for students on their caseload with swallowing needs. Traditionally, this had not been an expertise necessary to work in an educational setting, as previously dysphagia was primarily the responsibility of healthcare SLPs. However, with major cuts in healthcare coverage limiting a patient's duration in a rehab or hospital environment, developments in state and federal educational laws, and budgetary constraints, the medical SLP is no longer the sole provider of dysphagia services. The public-school SLP is now also responsible for this role (Power-deFur, 2000).

Approximately 17% of children with a developmental disability under age 18 require feeding and swallowing support (Castillo, Carr, & Nettles, 2010), although 25–35% of typical children and up to 80–90% of children with neurodevelopmental deficits have dysphagia problems (Vissoker, Yatzer, & Gal, 2015). With many of these children attending public school, dysphagia is an educationally relevant domain of practice (Arvedson, 2008). Dysphagia, also known as a “swallowing disorder,” was defined by Logemann (1998) as “difficulty moving food from the mouth to the stomach. An impaired swallow of a swallowing disorder results from a breakdown in one of the three phases of the normal swallow: oral, pharyngeal, and esophageal.”



It is important to recognize that a child's disability and subsequent feeding and/or swallowing issues may be medically related, and this can certainly influence the need for special education and related services (34 CFR Sec 300.34(c)(54). "Related services" include dysphagia as they are "developmental, corrective, and other supportive services as may be required to assist a child with a disability to benefit from special education" (34 C.F.R. Section 300.34). Under the Individuals with Disabilities Education Act (IDEA) of 2004, schools are held accountable for the provision of "related services" for students with significant health issues, which includes speech therapy (American Federation of Teachers, 2009). A child with dysphagia in a public school is also entitled to "school health services" provided by a school nurse or other qualified individual to help a child with a disability gain access to a free, appropriate public education (34 CFR 300.34 (c) (15). Thus, the school speech-language pathologist (SLP) has to be qualified to provide school health services that pertain to dysphagia management (i.e., handling tracheostomy tubes and feeding tubes).

Several court cases have illustrated the educational relevance of providing dysphagia services and have defined specific aspects that are considered "related services" or "school health services." Following a due process hearing with the New Mexico Department of Education (2003), the court ruled that having access to a mechanically soft diet, positioning, and monitoring were services that must be provided when it would support a child to stay in school. Another U.S. Supreme Court case, *Cedar Rapids Community School District v. Garret F*, 526 U.S. 66 (1999) concluded that providing a noneducational service in public education such as ventilation was appropriate if it would allow a child the ability to continuously attend school to learn and there was a trained professional in the school who could perform this function. Noneducational services were presumed to include health-related dysphagia activities per IDEA.

This case stresses the educational importance of providing dysphagia services in schools so that a child can receive a free appropriate public education (FAPE).

In the case of the Contoocook Valley School District in New Hampshire (2004), the public-school district was found liable for failing to safely address the diet, feeding, and swallowing needs of a child who presented with a significantly impaired pharyngeal swallow function and oral-motor deficits. Because this child's dysphagia was not properly addressed, the child had silent aspiration, which led to two hospitalizations for aspiration pneumonia. In this case, poor provision of school health services resulted in the child not being able to be at school due to these health issues, thus limiting their access to the academic curriculum and FAPE. In *Robertson vs. E. Baton Rouge Parish School Board*, No. 2012 CA 2039, 2013 WL3947124, a school district was held responsible for failing to supervise a nonverbal student with visual issues when they were eating. This resulted in severe choking and the death of the student. The student's teacher neglected to follow the specific feeding protocol in this child's Individualized Education Plan (IEP), which outlined the need for supervision. These cases, which highlight the grave consequences of not adequately addressing feeding and swallowing needs of public-school students, underscore the importance of public-school SLPs having the confidence and training to serve their students' needs safely and effectively (Homer, 2016).

Given that it is within the SLPs scope of practice to provide dysphagia services within public schools, it is essential that they are equipped to provide such services. To date, limited research has offered empirical data on the degree of knowledge and skills that public-school SLPs possess to successfully and responsibly provide feeding and swallowing services. Only two survey studies have been completed in the United States that have examined this. One is by Hutchins, Gerety, and Mulligan (2011), who investigated the attitudes of public-school SLPs

toward what their roles should be in dysphagia management and the tasks they were currently responsible for regarding students who have feeding and/or swallowing needs. Hutchins et al.'s study also addressed the prior dysphagia training and courses that SLPs received related to feeding and swallowing. The other study, by O'Donoghue and Dean-Claytor (2008), focused broadly on the formal education, professional development, and on-the-job training of the school-based SLPs who were surveyed, with one question asking the respondents to rate their general level of confidence in dysphagia management. However, neither study addressed the perceived level of preparedness that public-school SLPs have with regards to the individual knowledge and skills that ASHA has outlined as necessary to be able to serve children with feeding and/or swallowing disorders in schools (ASHA, 2002, 2007).

Although one international study has been conducted (in Australia and Malaysia), which measured participants' extent of formal education, workplace support and dysphagia training, opinions on their training, and the degree of perceived confidence regarding the knowledge and skills required for adequate dysphagia management, this study was limited to speech-language pathologists (SLPs) in hospitals and healthcare settings, and the sample size consisted of only 60 SLPs (Kamal, Ward, & Cornwell, 2012). Therefore, it did not give insight into the extent of familiarity or confidence that public-school SLPs had in this domain. Additionally, the scope of practice for dysphagia in other countries is different from that of the United States, making it difficult to transfer the findings to feeding and swallowing practices in the U.S. context (Kamal et al., 2012). However, the findings of this study indicated that SLPs with less dysphagia training had lower levels of confidence with feeding and swallowing management. Therefore, it was hypothesized in the current study that there would be a relationship between study participants' professional experience and perceived assurance.

## **Statement of the Problem**

When managing a student's primary dysphagia issues (also referred to as feeding and swallowing disorders), the public-school SLP might also be expected to be a part of "non-swallowing" components of feeding, such as choosing an appropriate setting for mealtimes, engaging in pragmatic interaction techniques during meals, selecting feeding utensils, and considering the impact on cognition when swallowing. The importance of having knowledge about the child's medical history and status in managing dysphagia highlights the necessity to get information from general practitioners, gastroenterologists, pulmonologists, and medical speech-language pathologists. It is also important to possess the expertise to interpret medical reports and ascertain data that are significant to the child's feeding and swallowing needs (Moskowitz-Kurjan, 2000). A team approach between speech-language pathologists in public schools and healthcare settings that includes ongoing communication is vital to promote a seamless transition and consistency of dysphagia services in instances where a child is or has received these services in a medical setting and is now receiving them in a public school (Miller, 2009).

Given the magnitude of knowledge and skills needed by a public-school SLP to handle the intricacy of issues and dangers associated with dysphagia and the non-swallowing elements, it is critical to determine and compare the degree of perceived assurance and exposure school-based SLPs have across all roles and responsibilities designated within the ASHA's guidelines for dysphagia management in public schools (ASHA, 2002, 2007; Moskowitz-Kurjan, 2000). O'Donoghue and Hegyi (2009) indicated the importance of a public-school SLP having the education, experience, and behavioral attributes to create, institute, and manage a child's unique dysphagia plan in a public school by using existing assessment and treatment approaches for feeding and swallowing. School-based SLPs need to be able to provide feeding and swallowing

services confidently and competently, which includes being efficient and successful (O'Donoghue & Hegyi, 2009).

Bailey, Stoner, Angell, and Fetzer (2008) highlighted much controversy in the literature as to whether the level of dysphagia training of a school-based SLP is adequate to meet the evolving dysphagia management needs of children in public schools. To make this determination involves a deeper examination of the prior coursework and hands-on experience with feeding and swallowing that public-school SLPs have acquired. Much of the literature has led to the same common concern that SLPs perceive being inadequately trained and prepared to support dysphagia in public schools (Bailey et al., 2008).

Outcomes from the few studies available point to reduced confidence of SLPs due to shortcomings in caseload experience with dysphagia, educational coursework on feeding and swallowing, exposure in a medical setting, and a lack of resources and support. These are considered the major challenges SLPs face in providing quality feeding and swallowing services in schools. SLPs report fear of managing dysphagia without having proper training (O'Donoghue & Dean-Claytor, 2008). These societal attitudes and perceptions of confidence toward school-based dysphagia management pose a profound problem (Hutchins et al., 2011; O'Donoghue & Dean-Claytor, 2008), especially because the SLP is often the primary case manager of dysphagia services in the school (Owre, 2006). According to a survey of SLPs across 41 states who belonged to ASHA Special Interest Groups 13 (Swallowing and Swallowing Disorders (Dysphagia)) and 16 (School-Based Issues), 47% surveyed revealed that they were responsible for the provision of swallowing services in the public-school sector (Owre, 2006). The ASHA 2014 Schools Survey on the caseload characteristics of SLPs concluded that dysphagia comprised 13.9% of a public-school SLP's caseload. These results represented SLPs across the

Northeastern, Midwestern, Southern, and Western portions of the United States. ASHA had conducted this same SLP Schools Survey previously in 2004, 2006, 2008, 2010, and 2012 and found percentages of students with dysphagia in public schools to be 12.3, 10.2, 9.3, 9.4, and 11.4, respectively. This research provides evidence that the prevalence of dysphagia in schools has remained consistent since 2004 (ASHA Schools Survey Report: SLP Caseload Characteristics Trends, 2004–2014). Although these statistics may not appear to signify an issue that requires addressing, a risk management article by Lambert (2004) confirms otherwise. This scholarly literature discusses that liability increases in lower incidence practice areas where ongoing clinical education, training, and experience is necessary to achieve and maintain confidence and competency (O'Donoghue & Hegyi, 2009).

It is essential to conduct research that specifically examines public-school SLPs' perceived assurance in the individual roles and responsibilities necessary to meet the dysphagia needs of the children they serve. This would ensure that they are equipped to promote safe eating and swallowing and prevent life-threatening conditions, including aspiration, choking, or pneumonia (Hutchins et al., 2011; O'Donoghue & Dean-Claytor, 2008). Although there is one study in the United States, which investigated the correlation between confidence levels in overall dysphagia management and prior coursework, exposure to continuing education, and the number of feeding and swallowing clients on an SLPs caseload (O'Donoghue & Dean-Claytor, 2008), further exploration is imperative to determine confidence levels of public-school SLPs in the knowledge and skill areas that encompass feeding and swallowing management. These data could be utilized to identify the existence of a statistically significant difference in opinions of SLPs about their confidence levels based on prior preparation, caseload dynamics and other demographic factors (Hutchins et al., 2011).

Statistical data on the number of public-school SLPs with no prior medical dysphagia experience and the effect on their confidence in managing dysphagia in schools has been insufficiently explored to date. A finite number of studies have addressed SLPs' perceptions on the gaps in the amount and type of training they have received. Additionally, the types of questions used in the available published surveys were broad-based, and the studies did not appear to indicate how extraneous variables were controlled for, such as subjects answering inquiries based on assumptions of what they thought researchers would want to hear or what they believed they should be expected to know (Hutchins et al. 2011; O'Donoghue & Dean-Claytor 2008).

An initial investigation into the roles and responsibilities of the public-school SLP in evaluating and treating dysphagia was spurred by a sudden growth in 2000 in the numbers of children with feeding and swallowing needs on caseloads of school-based SLPs. This resulted in a further extension of their scope of practice in managing dysphagia (Logemann & O'Toole, 2000). The number of students in public schools across the nation requiring feeding and swallowing services surged for a variety of reasons. First, technological advancements in prenatal and perinatal care greatly improved the survival rates of medically fragile children at risk for dysphagia who were previously in neonatal intensive care (McNeilly & Sheppard, 2008). Additionally, based on the need for schools to adhere to legal mandates, such as the Individuals with Disabilities Education Improvement Act of 2004 (IDEA), which included FAPE, required equal opportunities for students with special needs in the general education curriculum. Also, with the need to provide services in the least restrictive environment (LRE) per the Education for All Handicapped Children's Act of 1975, Pub. L. 94-142, larger numbers of students presenting with feeding and/or swallowing problems were receiving their education and related dysphagia

services in public schools (ASHA, 2010; Power-deFur & Alley, 2008). The Americans with Disabilities Act of 1990 also provided access in public schools for those with physical limitations and concomitant swallowing deficits, further increasing the number of children in public schools potentially requiring dysphagia services (Raymond, 2009).

The American Federation of Teachers (AFT) reported that from 1976 to 2006 alone the number of children with special needs in public schools nationwide had doubled, from 3.7 million to 6.7 million with the inception of IDEA mandates (AFT, 2009). Based on a report in 2014–2015, the number of children receiving services under IDEA had remained consistent with a total population of 6.6 million students. This included children with specific learning disabilities, speech and language impairments, other health impairments, autism, intellectual disabilities, developmental disabilities, multiple disabilities, emotional disturbances, and hearing impairments (NCES, 2016). Significant numbers of children with special needs have been found eligible for dysphagia services deemed educationally relevant, under the school classification of “other health impaired” (O’Toole, 2000; Owre & Huffman, 2008), as the United States Department of Education has placed dysphagia under this category (Assistance to States, 2006). In the current economic climate, third party payers require more children who are medically fragile or have significant global needs to obtain dysphagia assistance from a school environment. Thus, holding school SLPs accountable for demonstrating high-quality, time-efficient service provision to receive reimbursement from managed care (O’Toole, 2000; Owre & Huffman, 2008).

The economic recession and budget crisis of years past led to marked reductions in federal, state and local aid, which continues to be a major force in keeping students with complex special needs in school districts. Based on statistics from the Center on Budget and Policy



Priorities (CBPP) published in 2011, as of 2008 at least 34 states cut aid to K–12 schools (Johnson, Oliff & Williams; 2011; NASBO, 2010). In 2013, reports from the CBPP indicated funding capital remained lower than before the recession in two thirds or more of the United States. With the passing of IDEA, the federal government indicated plans to cover 40% of per student costs. However, this did not occur, leaving districts to cover significant amounts of money to meet the educational needs of these students (AFT, 2009). For instance, as of 2015 only 14.5% of the average cost per student was covered (\$1,743 of the \$12,057) through IDEA Part B grants to state education agencies, with states only receiving a fraction (36.1%) of funds that the federal government had promised (Education Commission of the States, 2015). ASHA further stated that because the federal government covered only a tenth of the costs to provide special education, districts relied heavily on local property tax monies to help support the remaining expenditures. In fact, approximately half of the funding for special education expenditures came from local tax revenue that public schools were entitled to through IDEA. However, available local tax funds varied greatly from town to town, which served as a barrier to what a district could and could not provide to a student with special needs (ASHA, 2017; New Jersey Department of Education, 2017). Given these factors coupled with the economic downturn that the United States faced, many states and their school districts needed to make significant budget cuts for special education (Education Commission of the States, 2012).

A study conducted by the New Jersey School Boards Association (NJSBA) in 2005 showed that, on average, public school districts spent about twice the amount to educate a special needs child as they did for a student in the general population. With local New Jersey school districts finding themselves responsible for 57% of the cost, it had become a monetary burden to send and keep students out-of-district, especially when faced with funding cuts and expenditures

on the rise (New Jersey School Boards Association, Task Force on Special Education, 2014). In 2006, the average cost to provide services for each special education student in public school was \$16,921, as opposed to \$7,552 for a child in general education (AFT, 2009). The latest expenditure data in 2013–2014 revealed that the cost to educate a child with disabilities in public school remained significant, at approximately \$12,057 per student. This included the provision of related services such as speech-language pathology. These figures are consistent with those reported in 1990–2000 through a U.S. Department of Education federally funded project, Special Education Expenditure Project. The task force for this project identified that special education expenditures were \$12,474, which was a 90.3% increase in the amount to provide general education at \$6,556 per individual (Education Commission of the States, 2015; Hibel, Farkas, & Morgan, 2010). It should be noted that although these were averages, certain disability categories came with higher expenditures. For instance, in 2009–2010, the average cost to educate a student New Jersey was \$15,162 for a child with autism and \$28, 202 for a child with a moderate cognitive impairment (Augenblick, Palaich, & Associates, 2011).

Between 2005–2006 and 2014–2015, an upsurge of 165% occurred in the number of children with autism for ages 6–21 in public schools across the United States. Additionally, a 51% rise occurred in the number of children classified as “other health impaired” with health problems, seizures, and motoric disabilities, all of whom could have had concomitant feeding and swallowing issues that would need to be addressed by the school SLP. One of every five children covered under IDEA in public schools across the country had autism or were classified as “other health impaired” (Samuels, 2016; U.S. Department of Education, 2015). According to a comparative analysis by ASAH in 2011, a not-for-profit organization of private schools and agencies in New Jersey, the cost for a public-school district in New Jersey to send a special

needs student out-of-district to a private school was \$45,358, on average, compared to the in-district average of \$12,474. The expenditure to send a special needs student to a county special services school was even greater, at an average of \$65,266. With school districts responsible for covering any remaining costs to educate their special needs students not covered by federal, state, and local taxes, it is not always feasible to send them to more expensive, out-of-district placements. As a result, the public-school SLP could have students with more complex needs on their caseload for whom they need to provide dysphagia management services, especially in wealthier school districts where funding by the federal government has been less than in low-income areas (Education Commission of the States, 2012).

### **Purpose of the Study**

The stance of ASHA on the scope of practice of SLPs in dysphagia management has significantly changed over the past decade, marked by an expansion of roles and responsibilities in this domain and a movement toward provision of swallowing and feeding services in schools. Given the expectations of the public-school SLP to possess a wealth of knowledge and skills in the assessment and treatment of dysphagia, it is important to identify the background and professional experience of these SLPs in feeding and swallowing as well as their assurance as providers of this service in schools (ASHA, 2002, 2007; O'Donoghue & Hegyi, 2009). SLPs in schools who had never worked in a medical environment may not have had any prior exposure managing swallowing and feeding difficulties, which could have affected their confidence in performing specific dysphagia roles and responsibilities (Owre, 2006). Given the delicate, multifaceted nature of swallowing and feeding issues that children with disabilities can experience and the safety and nutritional issues associated with this, it is pertinent to determine both the extent of experience and confidence that public-school SLPs possess to deliver

dysphagia services (Lefton-Grief & Arvedson, 2008). The present quantitative study, which is primarily descriptive in nature, was aimed at determining perceived level of confidence of public-school SLPs in the specific roles and responsibilities needed to provide quality dysphagia management, as well as identifying relationships between demographics, professional experience, and perceived assurance. The results offer insight into what dysphagia-training needs public-school SLPs have (ASHA, 2002, 2007).

The statistics, which highlight the inclusion of students in public schools with feeding and swallowing issues and the associated dysphagia roles and responsibilities within the school-based SLPs scope of practice, underscore the importance of investigating the professional experience of school-based SLPs with feeding and swallowing and their perception of confidence in the knowledge and skill areas that comprise dysphagia management (ASHA, 2002, 2007). The results of the O'Donoghue and Dean-Claytor (2008) and Owre (2006) studies indicated barriers faced by public-school SLPs in providing successful dysphagia services. These included limited practical experience with dysphagia, absence of basic knowledge, and inadequate opportunities for professional development in feeding and swallowing practices. Further study in this area was substantiated by questions raised about what was within the scope of public-school SLPs to address, the limited or no access to a school team assisting with these services, and administrators' apprehension to support these services given fear of litigation if SLPs did not perceive they were properly trained (O'Donoghue & Hegyi, 2009).

This is of importance given that public-school SLPs could be faced with many challenges during the dysphagia management process. Examples of these challenges include possible conflicts with parents if they request their child to be fed a specific type of diet that they receive at home, and the SLP does not consider the diet to be clinically appropriate based on the child's

oral-motor status. Or, if the public-school district does not support a formal evaluation process, the SLP might have to make recommendations based solely on observation, limiting the ability for them to obtain a full picture of the child's feeding and swallowing status. Other hurdles that the public-school SLP may encounter are other staff in the school being afraid to assist with dysphagia management. This could be dangerous if classroom teachers, aides, and nurses are not comfortable or are afraid of participating in this, especially when consistency is necessary for feeding safety. Also, if a public-school district is not familiar with dysphagia management, they may not know how to safely and effectively handle this type of student need or have an appropriate feeding and swallowing protocol in place to maintain student safety during eating. This shows having a public-school SLP with adequate knowledge and skills in dysphagia is critical to help effectively manage these aspects (Homer, 2016).

### **Conceptual Framework**

Based on Bandura's (1977) theoretical perspective on self-efficacy and behavioral change, this study was designed to determine perceptions of public-school SLPs about their level of confidence in each of the feeding and swallowing (dysphagia) knowledge and skill areas, as outlined by ASHA (2002), Hutchins et al. (2011), and Owre (2006), and the factors that influenced this. In accordance with Bandura, it was hypothesized that, in the current study, participants ratings of their confidence in the feeding and swallowing (dysphagia) roles and responsibilities might be influenced by their perceptions of what they believe society expects self-efficacy to be in this domain (Bandura, 1977, 1982). It was also hypothesized that, overall, public-school SLPs would indicate low levels of confidence in the dysphagia knowledge and skill areas.

Additionally, Bandura (1977) theorized that there was a direct positive link between a person's efforts and what they believed their level of self-efficacy should be in a certain area. Therefore, the greater a person's opinion of their efficacy, the more effort they would dedicate to that task. This could also be an indicator of how well a person would perform or the extent of their learning in a specific realm. Thus, this study allowed for an analysis of the potential relationship between participants' ratings of their confidence and their professional experience demographic characteristics. It was theorized that there would be a direct relationship between reports of confidence of public-school SLPs in the roles and responsibilities required in dysphagia management and (a) the degree of formal education and training they had in dysphagia, (b) their extent of experience with children with feeding and swallowing problems, and (c) the number of years of experience in the field and other demographic factors (Bandura, 1977, 1982).

The present study explored these hypotheses by investigating trends in experience of public-school SLPs with dysphagia, their background, and degree of confidence in performing the tasks involved in providing dysphagia management. These assumptions were based on the findings from previous studies by O'Donoghue and Dean-Claytor (2008) and Hutchins et al. (2011), which highlighted prior experience of public-school SLPs with dysphagia and their perspectives about feeding and swallowing roles and responsibilities in schools.

Bandura also believed that an individual's life experiences, achievements, physical state, observations of other's behavior, and other's perceptions of one's abilities, could impact upon personal opinions of self-efficacy. Based on his conceptual framework, it was acknowledged in this study that degrees of confidence for different roles and responsibilities involved in feeding and swallowing management in public schools could be shaped by these psychological stimuli,

which is a cognitive level of processing humans experience in identifying their self-efficacy (Bandura, 1977, 1982). Personal judgments of self-efficacy could affect an individual's thoughts and actions. Knowing a person's perceptions of their efficacy or confidence could offer insight not only into their individual skills, but also how well they would respond in different situations. This study was designed to measure ratings of confidence allowing for the investigation of cognitive thought patterns of individual SLPs (Bandura, 1977, 1982).

To gain insight into this, participants were surveyed through scientifically based, descriptive inquiry methods (Creswell, 2009). Numerous measurements were created to capture the way in which public-school SLPs considered and rated their assurance levels. The inherent bias that the researcher's perspectives, values, previous practical and cultural experiences, and education could have on the interpretation of the data and the bias that this could have on respondents' ratings, was acknowledged and accounted for (Bandura, 1977, 1982).

### **Research Questions**

The research problem and purpose of the study outlined were supported by the following research questions:

#### **Overarching Questions for Quantitative Analysis**

- RQ 1. What is the current level of confidence of public-school SLPs in dysphagia management, given the shift of feeding and swallowing management into the educational setting?
- RQ 2. What are the current dysphagia training needs of public-school SLPs, given the shift of feeding and swallowing management into the educational setting?

### **Subsidiary Questions for Quantitative Analysis**

- What are the roles and responsibilities of SLPs regarding feeding and swallowing (dysphagia) in public schools?
- Do roles and responsibilities in feeding and swallowing (dysphagia) management vary by school or location?
- Are there specific clinical competencies within the scope of school-based dysphagia management that SLPs report having less confidence with and for which they may need more training (i.e., safety, team collaboration, diet selection, determining signs and symptoms of aspiration)?
- Is there a relationship between demographic and professional experience characteristics (i.e., prior formal education, hands-on clinical experience working with dysphagia, age, gender, region, years of experience as a SLP) and levels of perceived confidence in the dysphagia clinical competency areas?
- What is the nature of the relationship, if any, between the demographic and professional experience characteristics of public-school SLPs (i.e., prior formal education, hands-on clinical experience working with dysphagia, age, gender, region, years of experience as a SLP) and levels of perceived confidence in the dysphagia clinical competency areas?
- Are there significant differences in confidence levels across the dysphagia clinical competencies between SLPs who practice dysphagia management in schools and those that do not?



## **Hypothesis**

It was hypothesized that public-school SLPs who conducted dysphagia management in schools would, on average, report higher levels of confidence in performing each of the 17 dysphagia clinical competencies than those SLPs who did not. Therefore, having experience would have a direct and positive correlation with perceived levels of confidence. Further it was anticipated that the results would yield a significant correlation between demographic and professional experience factors and confidence ratings.

## **Study Design and Methodology**

This survey research with a descriptive, quantitative research design, was intended to fill gaps in the literature as to the degree of confidence public school–based SLPs possess to perform the roles and responsibilities associated with feeding and swallowing (dysphagia) management in public schools. Extending upon prior research, the study was constructed to provide confirmation if public-school SLPs are adequately prepared in dysphagia and in which areas. Thus, offering direction if additional dysphagia education and training is warranted. It is also cross-sectional in which data was collected via an online survey on one occasion. It was designed based on the cross-sectional survey conducted by Kamal et al. (2012). Although Kamal et al. (2012) considered the level of knowledge SLPs had regarding dysphagia practice in Australia and Malaysia and the SLPs studied were solely in healthcare settings, the format could be adapted to investigate public school–based SLPs experience, roles and confidence in dysphagia management in the United States. Considerations for specific survey elements and items were based upon the findings of research conducted by Hutchins et al. (2011), O’Donoghue and Dean-Clayton (2008), and Owre (2006).

Participants for this research study were both SLPs who did and did not serve students with dysphagia needs in public schools across the different regions of the United States. Members of ASHA Special Interest Group (SIG) 1 (Language, Learning and Education), SIG 13 (Swallowing and Swallowing Disorders), and SIG 16 (School-Based Issues) were asked to complete a survey, via a link, with instructions posted on the online forum for each group. A broad perspective was gathered on recognized levels of confidence of public school-based SLPs to perform each of the dysphagia management roles and responsibilities, which was then generalized to the entire population of school SLPs across the United States. Gaining insight into levels of assurance offers evidence about the education and training needs of school SLPs in dysphagia management. This study provides data on the specific roles public-school SLPs play in dysphagia management across the United States, if there are patterns based on the setting or location the SLP worked in, and demographic and professional experience factors that may have influenced the perception of abilities of SLPs.

### **Significance of the Study**

With SLPs in public schools now viewed as clinical experts in dysphagia, they are expected to make sound professional decisions that maximize students' feeding and swallowing outcomes regardless of their prior training in this domain (Homer, 2008). Since dysphagia services became present in schools, there has been a great deal of debate and uncertainty whether school-based SLPs have the necessary training in dysphagia management based on their prior coursework and hands-on experience. An in-depth review of the available descriptive survey research reinforced a common concern that many SLPs perceive that they are not sufficiently prepared to support dysphagia in schools (Bailey et al., 2008). Given the paradigm shift of expanding feeding and swallowing services beyond the medical setting into the educational

domain, researchers began to explore the types of knowledge and clinical skills that were essential to adequately provide dysphagia management for students in a school setting.

The ASHA published guidelines in 2007 delineate which components of dysphagia services are considered educationally relevant and, subsequently, within the scope of practice of the school SLP. ASHA mandates are in accordance with IDEA regulations that indicate feeding and swallowing should be addressed if it impacts upon a child's academic performance in school. According to ASHA (2007), the instances that are considered "educationally relevant" include maintaining safe eating and swallowing, such as detecting and preventing choking and aspiration; participating in social mealtime experiences in a timely and safe fashion; and encouraging good nutritional status of students to promote health, brain development, and concentration needed for classroom learning (ASHA, 2010; Homer et al. 2000; Lefton-Grief & Arvedson, 2008). Sustaining a child's nourishment is also vital in a school environment, as it could impact upon a child's overall health status and their ability to attend school regularly (ASHA, 2007).

The 2002 document, "Knowledge and Skills Needed by Speech-Language Pathologists Providing Services to Individuals with Swallowing and/or Feeding Disorders" by ASHA states that a SLP must have knowledge and skills in offering resources to and educating students and their caregivers about dysphagia and the potential causes. The scope of practice of the SLP also includes mentoring school educators and caregivers about therapeutic techniques for both safe and successful swallowing and the social connections between eating function and academic success. The school SLP is responsible for engaging in multidisciplinary collaboration with any healthcare professionals a child is being followed by, to develop an appropriate dysphagia plan that ensures swallow protection based on a child's medical or health issues. Thus, it is essential

that the public-school SLPs possess an understanding of medical issues that pertain to dysphagia, have knowledge about instruments used to diagnose and manage swallowing and feeding disorders, and can analyze clinical and instrumentation information to make a diagnosis and determine an appropriate intervention plan (ASHA, 2002; Leuken, 2011). Making appropriate referrals to other healthcare professionals to rule out factors impeding swallowing and detecting dysfunctional feeding patterns are among many other expectations of the SLP in case management (Arvedson & Homer, 2006; ASHA, 2007).

Expertise in clinical decision-making during a dysphagia assessment is also required and involves: (a) determining candidacy for dysphagia services, (b) being able to identify diets that are both safe for swallowing and match each student's oral-motor capabilities for chewing and manipulating a bolus of food, (c) recommending diet modifications as appropriate, and (d) determining ethical feasibility of providing oral feeds. Other knowledge and skills needed for feeding and swallowing management include understanding the anatomy and physiology of the swallowing mechanism, having an awareness of swallow function and deficits associated with specific diagnoses, being able to effectively assess the status of muscles and motor development, and planning for eating. School SLPs also need to possess an awareness of the anatomy and physiology of the swallowing mechanism, understand and account for the effects of posture and dentition on safe swallowing, and have knowledge of and implement appropriate treatment methods. Furthermore, cultural competence that considered family beliefs, values, and food preferences of a given culture are necessary (ASHA, 2002, 2007; Whitmire, 2000).

Since feeding and swallowing service provision now resides in the educational setting, without adequate evidence-based research on the experience of public-school SLPs working with feeding and swallowing in public schools, their level of confidence in providing dysphagia

management, or standardized dysphagia training protocols to refer to for best practices, children could be put at a potentially hazardous risk for choking or aspiration at school when eating orally (ASHA, 2007, 2010; Homer et al., 2000; Lefton-Grief & Arvedson, 2008). The current study went beyond just providing information about overall levels of confidence of public-school SLPs in dysphagia management, as in previous studies, to offer specific data on the roles and responsibilities the SLPs play in feeding and swallowing and their self-assurance with the individual competencies they are required to perform. It allowed for an analysis of demographic and experience factors that may influence perceived confidence. It sought to fill gaps in the literature on dysphagia management in schools and to prompt further research. The key findings have significant implications for students receiving dysphagia services in public schools and the SLPs who provide them.

### **Limitations/Delimitations**

The current study presented some potential limitations, including the chance that survey responders might rate their degree of confidence in pediatric feeding and swallowing based on where they thought they should have been versus the level they were at. Since this was a far-reaching survey, conducted cross-country, alternate research designs such as conducting focus groups or interviews were not considered. Thus, broader trends versus smaller data points were investigated. Because this study surveyed public-school SLPs across the United States, it was understood that there may be a variation in the extent and type of roles that the SLPs play in dysphagia management depending on the region they work in. This could have influenced responders' reports of perceived assurance in feeding and swallowing, which could have marginally impacted upon the ability to generalize the finding. Also, with the continued

evolution of dysphagia management in schools, future public-school SLPs may require additional learning needs in this domain.

### **Organization of the Dissertation**

This research included a comprehensive investigation of the issues, including research, study approaches, data analysis, and findings, to give the reader a full picture of the scope of the study. Chapter 1 of this dissertation offers an introduction to the topic and discussion of the problem and purpose of investigation, followed by the conceptual framework, research design, and methods to address the stated problem. These components are supported by the subsequent research questions. The importance of this investigation and potential limitations are also described. Chapter 2 contains a thorough account and analysis of the scholarly literature, from past to present, on this topic. Findings of previous studies, scope of practice documents, statistical data and specific gaps in the literature are highlighted to demonstrate the need for further study in the area. In chapter 3, the study and survey design, methods for selecting participants, collecting data, and data analysis are specifically outlined. Chapter 4 reports the statistical findings of the study with an interpretation and summary of the data. Chapter 5 discusses the conclusions, provides recommendations based on the findings and implications for future practice and study.

### **Definition of Terms**

*ASHA Certified*: Holding the Certificate of Clinical Competence (CCC), a nationally recognized professional credential that represents a level of excellence in speech-language pathology (CCC-SLP; ASHA web).

*Aspiration:* When food, liquid or secretions enter the airway before, during, or after the pharyngeal phase of swallowing, which can cause potentially fatal aspiration pneumonia (ASHA, 2001).

*Cerebral Palsy:* Neurological disease or dysfunction frequently associated with swallowing problems such as drooling, oral abnormalities, impaired pharyngeal movement and aspiration (Reilly, Skuse, & Poblete, 1996).

*Dysphagia:* Defined as “a swallowing disorder” that impacts the development of eating and drinking skills. It involves the mouth, pharynx, larynx, and/or esophagus (ASHA, 2001). It is “difficulty moving food from the mouth to the stomach”. An impaired swallow of a swallowing disorder, resulting from a breakdown in one of the three phases of the normal swallow: “oral, pharyngeal, and esophageal” (Logemann, 1998). This also includes managing secretions and oral medications throughout the oral, pharyngeal and laryngeal swallow phases (ASHA, 2007).

*Dysphagia evaluation:* Observation, analysis and diagnosis of feeding, eating, and swallowing status based on tolerance of food consistencies, positioning, oral-motor patterns, sensory functioning, and dentition (AOTA, 2006).

*Dysphagia Management:* “Involves all aspects of evaluating, treating, counseling, and discharge planning” (ASHA, 2001).

*Dysphagia Treatment:* Rehabilitative compensation techniques to improve feeding and swallowing physiology and behaviors (ASHA, 2001).

*Feeding Disorder:* Trouble manipulating food or liquid in the mouth prior to initiating a swallow in the oral phase (ASHA, 2001). This also includes problems managing saliva during the oral phase and medications taken orally (ASHA, 2007).

*Feeding and Swallowing:* Involves presentation, preparation, organization, and movement of liquid and food from the oral cavity into the esophagus and through the stomach (ASHA 2001). “Swallowing and feeding disorders” is a term used by ASHA to include dysphagia and delays and/or disorders in eating and drinking abilities (ASHA, 2007).

*Medically Fragile:* Serious or chronic illness often resulting from breathing, cardiac or gastrointestinal issues (ASHA, 2002).

*Oral-Motor:* Symmetry as well as strength and range of motion of the tongue, lips, and jaw for eating (ASHA, 2001).

*Team Collaboration:* Correspondence with medical staff and other health and educational professionals in a multidisciplinary, interdisciplinary, or transdisciplinary manner for evaluation and treatment of medically fragile individuals with swallowing and feeding disorders (ASHA, 2001).

*Quality Dysphagia Services:* Being trained and competent in the prevention, evaluation and treatment of swallowing and feeding problems (ASHA 2002).



## CHAPTER 2

### LITERATURE REVIEW

#### **Outlining the Literature Review**

The purpose of providing this detailed synopsis of peer-reviewed, evidence-based journal articles, dissertations, position statements, technical papers, and practice guideline documents published by ASHA on school-based feeding and swallowing is to offer a comprehensive overview of information available on dysphagia management in public schools. The current literature base supports the need for further studies to define (a) the opinions of public-school SLPs regarding their degree of self-assurance with feeding and swallowing, (b) their particular roles in this domain, and (c) demographic and professional experience factors. It also highlights the need to confirm the educational preparation and training needs of SLPs who manage children with dysphagia in public schools.

The literature search included library databases and journals published through ASHA. Articles included were limited to feeding and swallowing (dysphagia) as it related to practices in public schools. The literature reviewed spans back to 1990 primarily and offered a comprehensive picture of the development of feeding and swallowing in schools over time and discussed the findings and limitations of the sparse research that has been conducted in this area to date.

This literature review included an in-depth analysis of the responsibility of public-school SLPs regarding feeding and swallowing and its educational relevance, including statistics on the prevalence of those in jeopardy of having feeding and/or swallowing disorders in schools. It also discussed the scope of practice of SLPs in feeding and swallowing management in the public sector. This was critical to the discovery of the instructional and experiential training needs of

the school-based SLP to be qualified to meet the feeding and swallowing demands of children receiving dysphagia services. To underscore the relevance of the current study, the literature review began with articles that provided statistics about children requiring feeding and swallowing services across disabilities and conditions, the roles and responsibilities of the public-school SLP in feeding and swallowing, and the knowledge and skills needed to provide this service. References discussing legal educational mandates and the relevance of providing feeding and swallowing services were summarized to emphasize the importance of the public-school SLP in dysphagia management and the guidelines the SLP must adhere to.

An overview of the different special needs populations that could require feeding and swallowing services in schools and the type of dysphagia issue they may present with, provided insight into the depth and breadth of knowledge and skills needed by an SLP. It was integral for this type of investigation to have an understanding of the possible complications often associated with dysphagia for which clinical competence in feeding and swallowing is necessary in schools, and to have knowledge of recently conducted research on the perceived dysphagia training needs of public school clinicians working with those who are medically involved, have autism, learning disabilities, and/or prematurity. Important considerations and contemporary trends in feeding and swallowing in the public-school sector were highlighted in this literature review to demonstrate the relevance of gathering data on confidence and experience levels of school-based SLPs in dysphagia (ASHA, 2010; Owre, 2006). Data was discussed from a specific public-school district, which has successfully designed and employed educational training programs for SLPs on very specialized topics areas such as preliteracy. This offered guidance for managing dysphagia in public schools nationwide and served as an exemplar for implementing a dysphagia training protocol for SLPs in public schools.

## **Statistics**

According to the “2014 Schools Survey: SLP Caseload Characteristics Report” by ASHA, 13.9% of school-based SLPs were identified as working with children with dysphagia in public schools. Of these SLPs, 25.2% of the children were preschool age, 9.7% were elementary school students, and 11% were in secondary grades (Arvedson, 2008; Brackett, Arvedson, & Manno, 2006; Lefton-Greif, & Arvedson, 2008; Manikam & Perman, 2000). In 2016, ASHA reported the percentage of SLPs providing feeding and swallowing management in schools to be slightly lower, however feeding and swallowing problems continued to be prevalent in this setting (ASHA SLP Schools Survey: Survey Summary Report, 2014, 2016). Back in 2006, a national survey conducted by ASHA SIG 13 (Swallowing and Swallowing) and SIG 16 (School-Based Issues) revealed that up to 35% of SLPs working in public schools served students with dysphagia (Owre, 2006). These were the highest numbers to date, with this statistic being almost double the 19% reported in 1997 on an ASHA Omnibus survey.

Currently there are many special education classes and programs in public schools that provide education to students with disabilities who have concomitant feeding and swallowing issues. These include self-contained and multiply disabled classrooms and autistic programs. Children with dysphagia in schools include those who have significant developmental disabilities, neurological disorders, genetic syndromes, cleft lip and/or palate, traumatic brain injuries, or associated medical conditions. As per reports in the research, approximately 30–80% of children with developmental disorders also have dysphagia (Arvedson, 2008; Bracket et al., 2006; Lefton-Greif, & Arvedson, 2008; Manikam & Perman, 2000; Mabry-Price, 2014).

In general, the number of children exhibiting feeding and swallowing disorders is on the rise and is due at least in part to advanced detection of these problems and enhancements in

medical and surgical care that have increased the survival rate of children who are born premature, who have a low birth weight, and/or have complicated medical diagnoses (Lefton-Grief & Arvedson, 2008, 2016). According to Arvedson (2008), 40–70% of premature babies and 70–90% of children with developmental issues experience feeding and swallowing problems. The overall population of children with dysphagia was reported to be 10–25% (Rogers & Arvedson, 2005; Sullivan, Lambert, Ford-Adams, Griffiths, & Johnson, 2000). Every year in the United States more than 500,000 children are identified as having feeding and swallowing issues, with growing numbers of children presenting with complex dysphagia problems that are multifaceted. For instance, medical advancements have allowed more children with cardiac conditions who would have been at risk for feeding and swallowing problems and gastrointestinal issues to survive (Lefton-Grief & Arvedson, 2016). Rommel, De Meyer, Feenstra, and Veereman-Wauters (2003) found that nearly 50% of the 700 children they evaluated with feeding problems had both medical and oral problems affecting feeding and swallowing.

In an investigation of current popular trends, findings indicate that the prevalence of children in schools that have swallowing dysfunction due to medical issues is significant. Prematurity is often associated with medical complications including significant neurological deficits or frequent illnesses that can dramatically impair feeding and swallowing (ASHA, 2010; Billeaud, 2003). Many of these medically fragile children, who are at risk for aspiration and dysphagia, eventually attend public schools. Ongoing innovations in medical technology have continued to improve survival rates and subsequently increased the number of children that require dysphagia remediation in school (Lefton-Grief & Arvedson, 2008). A longitudinal comparison of the number of preterm infants born in the United States from 1996 to 2006

yielded astonishing quantitative figures, revealing that the numbers had risen more than 16% over time (March of Dimes, 2009). With this proliferation of complex dysphagia cases in schools, the SLP was deemed to have the specialization and expertise required to provide appropriate care for this population of students (Lefton-Grief & Arvedson, 2008; Power-deFur, 2000).

Dysphagia was reported to affect 90% of children with autistic spectrum disorder (ASD; Kodak & Piazza, 2008), 70% of which experienced challenges tolerating certain food textures and types (Twachtman-Reilly, Amaral, & Zebrowski, 2008). These swallowing problems may be due to coughing or choking during eating; oral-motor, sensory, or behavioral issues; or weight loss. It is also important to note that 25–40% of typical children presented with feeding or swallowing problems that were behavioral or sensory in nature or resulted from taking medications (Mabry-Price, 2014; Manikam & Perman, 2000). Given these statistics, it was expected that children with feeding and swallowing issues would be found in most public-school districts across the United States, further underscoring the pertinence of knowing what level of preparation public-school SLPs had to manage this population and what their training needs were (Arvedson, 2008). Children who experienced dysphagia may have had structural or functional issues of the oral mechanism that could affect the swallow such as laryngomalacia, laryngeal cleft, or vocal fold paralysis, whereas others may have had difficulty coordinating the swallow with the oral structures required for feeding due to neurologic and neuromuscular conditions where sensorimotor issues could also be present (Lefton-Grief & Arvedson, 2016). This overview of statistical data indicated that students with dysphagia in public schools represented a broad, diverse range of disabilities, including those with genetic-based syndromes, chromosomal

abnormalities, developmental delays, neurological disorders, and sensory impairments (Moskowitz-Kurjan, 2000).

With the enactment of the Individuals with Disabilities Education Act of 2004 mandating public schools to provide all children access to a Free Appropriate Public Education (FAPE) in the least restrictive environment (LRE), it has become more common for school-based SLPs to encounter these children on their caseload (Homer & Faust, 2017). These statistics are significant and highlight the need for public-school SLPs working with these children to have adequate knowledge and skills to be able to provide dysphagia services that maintain students' health and safety. The ASHA Code of Ethics (2010) highlighted that SLPs must have competency in each domain within their scope of practice to ethically provide the service. This meant having coursework, training, and experience in the area. Therefore, working with children with dysphagia in schools may warrant additional preparation in the prevention, assessment, and intervention for swallowing and feeding problems (ASHA, 2002; Mabry-Price, 2014). SLPs continue to seek support in this high-risk domain, as their opportunities for prior formal education in dysphagia are variable (Lefton-Grief & Arvedson, 2016). Significant dangers are often associated with dysphagia, including aspiration that could cause severe pneumonia or choking and profoundly impact a child's nutritional status, overall health, and brain development for learning in school. Death could occur in the most severe instances, making it pertinent for a public-school SLP to be highly qualified to meet these needs (Mabry-Price, 2014). Regardless of the root of a child's feeding and/or swallowing problems, health issues could have negative consequences such as poor development of bones and vitamin deficiencies (Cornish, 1998; Mabry-Price, 2014; Sharp et al., 2013). There could also be associated growth problems, pragmatic deficits, and academic difficulties (Sharp et al., 2013).

## **Laws and Educational Relevance**

Under the U.S. Department of Education Individuals with Disabilities Education Improvement Act (IDEA) of 2004, children are eligible to receive dysphagia management in schools under the classification of “other health impaired (OHI)” if their feeding and swallowing problems negatively impacted upon their educational success (Mabry-Price, 2014). It is essential that a child consumes enough nutrients during school snack and lunchtimes and can swallow the foods and liquids safely to be able to participate in academic and extracurricular activities to the best of their ability and have readiness to learn (Homer & Faust, 2017). The verdicts of recent court cases have indicated that public schools are accountable for addressing educationally relevant swallowing and feeding issues, including maintaining the safety of students during feeding and swallowing, providing them with access to the curriculum, and offering opportunities for peer exchanges during feeding experiences (O’Toole, 2000; Power-deFur, 2015; Power-deFur & Alley 2008). It also involves supporting proper nutrition, hydration, and breathing status of children in school. This has posed itself to be difficult because schools are not equipped with the same medical resources as hospitals (Homer & Faust, 2017).

According to ASHA’s *Guidelines for Speech-Language Pathologists Providing Swallowing and Feeding Services in Schools* (2007), dysphagia services in schools are considered academically relevant as “Students must be safe while consuming food and drinks at school. This means access to appropriate programming, personnel, food, and procedures that promoted safe swallow. Proper nourishment and hydration are needed for students to access the curriculum. Keeping students healthy (free from aspiration pneumonia or other illness related to poor nutrition) maximizes their school attendance. Students must develop skills for eating efficiently during meals and snack times so that they could complete these activities with their

peers safely and in a timely manner” (ASHA, 2007, Mabry-Price, 2014). This underscores the need for further investigation into the level of knowledge and skills of public-school SLPs in dysphagia to support a student’s feeding and swallowing and subsequently their academic achievement.

### **Roles and Responsibilities of SLPs with Dysphagia in Schools**

Given the unique and complex skill set required to provide dysphagia management services, ASHA (2001) designated this as the primary responsibility of SLPs in most clinical settings in the United States (Lefton-Grief, 2008). With feeding and swallowing falling under the scope of practice of SLPs in public schools, they must be qualified to diagnose dysphagia and evaluate and treat feeding and swallowing, including having knowledge about appropriate assessment tools to use (Mabry & Price, 2014). To be able to adequately evaluate a child in feeding and swallowing, having knowledge of typical feeding milestones (Roche et al., 2011) and oral motor and sensory development, including movement patterns of the tongue, lips, and jaw for chewing and swallowing is vital (Paul & D’Amico, 2013). Successful management of dysphagia also involves clinical training and education on the oral anatomical structures, physiological functions, and neurological processes required for swallowing (Moskowitz-Kurjan, 2000). According to ASHA (1990) the public-school SLP must have the knowledge and skills to complete a clinical oral-pharyngeal and respiratory evaluation, conduct a structural-physiologic examination with members on the interdisciplinary feeding team, determine eligibility for feeding and swallowing services, and make management decisions regarding diet and risk precautions (Power-deFur, 2000).

The public-school SLP must have been trained to create an Individualized Education Plan (IEP) that includes appropriate feeding and swallowing goals, a feeding intervention plan, and



the ability to effectively implement the proposed blueprint. They must be qualified to determine and provide any necessary feeding accommodations and engage in team collaboration with caregivers, paraprofessionals, cafeteria staff, teachers, occupational therapists, physical therapists, and outside healthcare professionals on the case to provide dysphagia management that was holistic in nature (Mabry-Price, 2014). Specifically, the SLP needs to be well versed in different diet consistencies, selecting appropriate diets based on the student's disability, and determining when adjustments to a diet were warranted based on the child's current feeding and swallowing functioning (Mabry-Price, 2014). By having adequate education and training in oral-motor, sensory, and behavioral factors that impact upon feeding and swallowing, the public-school SLP could identify dysphagia treatments that meet the specific feeding and swallowing needs of the child (Roche et al., 2011). It is the role of the school-based SLP to offer the highest-quality dysphagia treatment and provide education, training and counseling to students and their parents (ASHA, 1990, Power-deFur, 2000).

Not only do SLPs in public schools need this knowledge, but it is necessary for them to be well-informed about positioning equipment and adapted cups, spoons, forks, plates, or bowls to make appropriate recommendations for adaptive utensils as warranted and educate students on how to use them. They must have the skills to assist with proper positioning, food intake using utensils, and helping with pacing of food and liquids (Mabry-Price, 2014). The SLP should have knowledge of proper seating and correct positioning that promotes postural control and reduces the risk of choking, so they could effectively focus on oral-motor function to improve lateral movement of the tongue. To do so requires not only professional education and experience in the field, but also interprofessional collaboration with an occupational or physical therapist trained in these specific areas of practice that could share information (Lefton-Grief & Arvedson, 2016;

Roche et al., 2011). Motor therapists could assist with postural alignment and mobility of the head, neck, shoulder girdle, and trunk, as this influences tongue function and swallowing (Darnell, 1983; Roche et al., 2011). The oral and pharyngeal status of the child needs to be considered to swallow properly, so does the child's core strength, control of their head and respiratory capacity. Hence, why teaming with the physical and occupational therapist is both valuable and critical. It is essential for the SLP to collaborate with the occupational therapist to understand a child's sensorimotor ability for feeding and to help them achieve success with this daily function (Paul & D'Amico, 2013).

Corroboration is essential with a gastroenterologist, yet another stakeholder, when the SLP suspects that a child presents with risks of dysphagia and/or aspiration (Power-deFur, 2000). Furthermore, the school SLP must also monitor a child's nutrition to prevent malnutrition and dehydration. To help students maintain a healthy nutritional status, the SLP must have knowledge of the social and physiological aspects that influence this and may need to consult a dietician to develop an individualized diet plan. Consulting with a registered dietician could provide the public-school SLP with insight into the nutritional needs of children based on their age. For example, in the elementary years prior to adolescence, children require portions of protein that equal 0.95 g/kg of their total body weight (Institute of Medicine, 2005/2006), and boys need roughly 3.3 liters of fluid per day compared to 2.3 liters for girls. By collaborating with a registered dietician, the SLP could get additional guidance on appropriate foods to suggest for the child that meet diet consistencies being recommended (Brown, 2011). Additionally, having knowledge about the caregiver and child dynamic during meals is necessary to understand patterns of feeding behavior and provide feeding training and support to the caregiver. This could be accomplished by maintaining ongoing lines of communication with the

child's family (Lefton-Grief & Arvedson, 2016). Thus, having familiarity and experience with interprofessional education and practice is paramount.

It is compulsory for a public-school SLP to have expertise in dysphagia to provide school staff, teachers, administrators and caregivers with in-service consultations on safe feeding and swallowing techniques and protocols, They also arrange the particular dysphagia services that are provided, identifying a feeding plan that ensures adequate nutrition is maintained to minimize or avoid aspiration risk, and handling airway obstruction and choking should it occur (Homer & Faust, 2017; Mabry-Price, 2014). Homer and Faust (2017) highlighted the importance of having the skills to create a framework for feeding across the school and district that is safe and the ability to generate goals for the student that are functional, meet their individual needs and are aimed at advancing their feeding and swallowing behaviors (Groher & Crary, 2010). Being able to determine a child's feeding and swallowing status to develop a feeding treatment plan requires knowledge of the anatomy and physiology for eating and swallowing. Goal development for dysphagia management is contingent upon being able to interpret and synthesize information from parent and teacher interviews, medical history, clinical assessment, and evaluations from other disciplines and professionals working with the child (Arvedson, 2001; Homer, 2016; Overland & Merkel-Walsh, 2013). In developing feeding and swallowing goals and an intervention plan, the public-school SLP must ensure adequate access to appropriate resources and support from school personnel to provide dysphagia services (Moskowitz-Kurjan, 2000). Having the training to clearly, accurately and thoroughly document all dysphagia management services is yet another skill set the public-school SLP needs to possess to work with dysphagia cases in a school environment. The ASHA Code of Ethics (2016) specifies the type of documentation the school SLP must maintain for a dysphagia case, including a record of

measures implemented to safeguard against feeding and swallowing risks and emergency protocols, a written account of the feeding approach that the school is following for the child, and the role each stakeholder is playing in the process. Any communications or collaboration with families, school or medical team members needs to be described in written form as well as daily log notes of treatment sessions and progress reports (Homer & Faust, 2017).

In cases where medical issues are suspected, interdisciplinary team collaboration with healthcare practitioners, including a medical speech-language pathologist, pediatrician, otolaryngologists, pulmonologists, registered dietitians, radiologists, and families is vital for the SLP to know what a child could handle to prevent choking episodes or aspiration at school (AAP, 2010; Gregori et al., 2008). Individuals on the medical team could also include feeding specialists, occupational and physical therapists, nurse practitioners, and/or a family counselor (Roche et al., 2011). Because the public-school SLP is accountable for each child's safety on their caseload, it is necessary that a child's medical needs be managed while simultaneously targeting their feeding goals in an educational context (Lefton-Grief & Arvedson, 2008; Owre & Huffman, 2008). Given the results of a medical swallow assessment, the SLP has to understand the anatomy of the swallowing mechanism and all oral structures involved in eating and swallowing, as well as the phases of a swallow to be able to recognize a child's abilities and limitations in this domain (AAP, 2010; Gregori et al., 2008). It is critical for the public-school SLP to recognize when a medical referral is warranted to obtain clearance that a child is safe to target feeding and swallowing and with what consistencies (ASHA, 2007; Homer & Faust, 2017). It is the school district's and SLP's responsibility to offer professional development about the significant medical dangers and life-threatening outcomes that could occur if a child is fed a diet that they could not handle motorically or medically or they are not swallowing safely

(Mabry-Price, 2014). Cultural competence is yet another domain where skill is needed, to adequately correspond with culturally diverse families and identify a feeding approach that meets their child's unique feeding and swallowing needs and is safe (ASHA, 2007; Mabry-Price, 2014). Pediatric choking accounts for 41% of food related deaths across the world (Edwards & Martin, 2011). Thus, the SLP must be savvy during intervention sessions and mealtimes at school to prevent choking hazards and educate parents on choking risks and prevention techniques (Edwards & Martin, 2011; Gisel, Lange, & Niman, 1984). Parents must be apprised of the connection between feeding and swallowing issues and other aspects of the child's growth, including how to support their global development (Delaney & Arvedson, 2008). The school SLP should be trained to encourage family engagement in the process of the intervention program for feeding, and mutual goals should be developed between the SLP and caregivers (Roche et al., 2011). Yet another role of the school SLP in the domain of dysphagia is being well versed on the educational laws, regulations and ASHA scope of practice guidelines that surround feeding and swallowing practice in the school setting, so they appropriately serve these children as well as advocate for the feeding and swallowing services a child may need (Homer & Faust, 2017).

### **Common Populations Seen for Feeding and Swallowing Problems in the Public School Autism Spectrum Disorder**

The Centers for Disease Control and Prevention (2014) listed the prevalence of autism spectrum disorder (ASD) to be one in 68 children. Autism spectrum disorder (ASD) is a neurological disorder that is developmental in nature and causes global disabilities in socialization, communication and cognition, particularly in play skills. The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) highlighted behavioral rigidity, ritualistic

actions, and compromised sensory function as additional factors that affect feeding ability in children with ASD (American Psychiatric Association, 2013). According to ASHA's 2016 Schools Survey, 91.3 % of public-school students being seen for dysphagia had ASD. This is not surprising, given that feeding and swallowing issues occurred in up to 89% of children with ASD, making it the most typically occurring associated condition (Ledford & Gast, 2006; Leyfer et al., 2006). In fact, dysphagia was more prevalent in children who had ASD than any other congenital or acquired disorders (Dominick, Davis, Lainhart, Tager-Flusberg, & Folstein, 2007; Vissoker et al., 2015). Because eating is a vital activity of daily life that affects the ability to live, grow and develop cognitively (Satter, 2007; Vissoker et al., 2015), and it could have significant social implications (Engel-Yeger, Hardal-Nasser, & Gal, 2011; Laud, Girolami, Boscoe, & Gulotta, 2009; Matson & Fodstad, 2009) the public-school SLP needs to be well versed in common characteristics of ASD, causes, and manifestations in feeding and swallowing, to provide safe and effective dysphagia management in these cases.

Feeding and swallowing issues in the ASD population tend to present themselves as food selectivity, including avoidance of certain colors, types, or textures of foods or picky eating (Herbert & Arrangab, 2006; Mari-Bauset, Zazpe, Mari-Sanchis, Llopis-Gonzalez, & Morales-Suarez-Varela, 2013; Matson & Fodstad, 2009; Rossignol & Frye, 2012; Vissoker et al., 2015), which could result in the child having a limited diet repertoire or neophobia of foods (Marshall, Hill, Ziviani, & Dodrill, 2014). This in turn could lead to a significantly reduced intake of energy and nutrient-rich foods resulting in weight loss, low weight, failure to thrive (Keen, 2008; Marshall et al., 2014), or an overabundant intake of these foods resulting in obesity, which could lead to diseases and other health complications in adulthood (Kelder, Perry, & Klepp, 1994; Lucas, 2005; Marshall et al., 2014; Matson & Fodstad, 2009; Rimmer, Yamaki, Davis Lowry,

Wang, & Vogel, 2010). Children could also experience gastrointestinal difficulties or iron deficiencies from a restricted food repertoire (Bosaeus, 2004). Nadon, Feldman, Dunn, and Gisell (2011) investigated the feeding and swallowing patterns of children with ASD and those who were neurotypical, and they found that feeding issues were twice as prevalent in the ASD population, with limited food repertoire and resistance to attempting novel foods as the most frequent problems (Nadon et al., 2011). Food selectivity includes “eating only a narrow variety of foods and is often used to refer to a range of different eating problems, such as selectivity by texture and type, eating a limited repertoire of accepted foods, and high-frequency single food intake” (Mari-Bauset et al., 2013; Matson & Fodstad, 2009; Vissoker et al., 2015). This is often thought to be due to restricted interests, perseveration and the need for routine, which is commonly associated with ASD (Matson & Fodstad, 2009). This could translate into the need for foods to be offered in a certain way using specific utensils (Schreck, Williams, & Smith, 2004). Children with ASD could also suffer from:

- food refusal, which is more severe and involves rejecting most or all foods presented (Williams, Field, & Seiverling, 2010);
- aggressive behavior during feedings (Provost, Crowe, Osbourn, McClain, & Skipper, 2010); food pocketing, which involves packing food in the buccal cavity (Nicholls & Bryant-Waugh, 2009; Seiverling, Williams, & Sturmey, 2010);
- difficulty chewing and swallowing foods that could result in aspiration, choking, or severe respiratory compromise (Field, Garland, & Williams, 2003;
- Nicholls & Bryant-Waugh, 2009);
- reduced appetite and poor nourishment (Beighley, Matson, Rieske, & Adams, 2013);

- vomiting and gastroesophageal reflux disease; pica, which is the eating of nonedible items (Kerwin, Eicher, & Gelsinger, 2005; Matson, Hattier, Belva, & Matson, 2013);
- eating too little or too much (Broder-Fingert, Brazauskas, Lindgren, Iannuzzi, & Van Cleave, 2014; Williams et al., 2010);
- ritualistic or repetitive eating behaviors noted to be correlated with food selectivity (Matson & Fodstad, 2009; Zandt, Prior, & Kyrios, 2007);
- pacing issues (Beighley et al., 2013); or
- spitting out food (Vissoker et al., 2015).

A study by Field et al. (2003) revealed that children with ASD who refused foods often had associated gastroesophageal reflux issues.

Feeding and swallowing issues in children are often the outcome of underlying behavioral, sensory, motor or social deficits that were physiological, environmental, or medically based (Herbert & Arrangab, 2006; Rossignol & Frye, 2012; Vissoker et al., 2015). Schwartz (2003) noted that particularly for children with ASD, behavioral and/or sensory issues tended to be the primary cause. Education and training in making this differential diagnosis were necessary for selecting a systematic treatment plan that targeted the primary cause (s). Refusal of foods, tolerance for a limited food repertoire, spitting out certain types of foods, or gagging on particular food textures were considered behavioral types of feeding issues (Ledford & Gast, 2006), whereas a clear dislike of specific textures was sensory in nature. Research by Klintwall et al. (2010) indicated that children with autism exhibit sensory processing problems. They could be hypersensitive to food items with increased textures or tactile, gustatory, olfactory auditory, and visual properties and prefer smoother foods (Schreck et al., 2004). On the other hand, they could be hyposensitive to tactile, gustatory, olfactory auditory and visual stimuli and seek foods



with greater texture (Burklow, Phelps, Schultz, McConnell, & Rudolph, 1998). In either case, these sensory processing challenges could have a pervasive effect on feeding development in a school environment (Rogers, Hepburn, & Wehner, 2003). For instance, a child with ASD may get overwhelmed by the multitude of sensory signals all at once during lunch in the cafeteria, including the smell of the food, increased volume of the students talking with each other and the echoing of their voices, bright lights, reduced structure, social demands and predictability, and children moving quickly and freely. They may respond by shutting down and acting out, which could inhibit their ability to finish their lunch or engage in the social aspects of meals with peers.

Behavioral responses may vary, making it essential for the SLP to be hypervigilant and have the training to recognize and handle these sensory stressors that impact feeding (Twachtman-Reilly et al., 2008). A cafeteria room environment, which could lack predictability, may be challenging for a child with ASD who prefers routine during meals, including how the meal is structured, the types of food given, and how they are arranged on the plate (Volkmar & Wiesner, 2004). The public-school SLP needs to be competent in coaching a child to navigate changes in routine and designing a uniform process of food presentation to simulate a more predictable environment. Because children with ASD often have trouble comprehending rules for social conduct, they may demonstrate inappropriate feeding behavior within the social environment of lunch at a public school or become stressed and resist eating. It is the responsibility of the public-school SLP to teach and model appropriate feeding conduct in a group setting and collaborate with school staff and caregivers to design routines and guidelines during feeding times that meet each child's unique needs (Twachtman-Reilly et al., 2008). Additionally, to understand the type of sensory issues influencing feeding and swallowing it is vital for the SLP to work closely with an occupational therapist. If the root of feeding issues is

sensory, it is essential to have a solid background on sensory-based feeding treatments, including oral desensitization techniques, strategies to increase portion size and repertoire of novel foods, as well as advance texture (Ernsperger & Stegen-Hanson, 2004). However, much of the literature available on interventions for feeding, including methodologies for offering food and cueing procedures (Ahearn, 2003), backward chaining (Hagopian, Farrell, & Amari, 1996), and approaches for reinforcement (Buckley, Strunck, & Newchok, 2005), was limited to single case studies making it difficult to generalize the findings of effective approaches to the general population of ASD students in public schools across the United States.

Along with these other aspects, the public-school SLP needs to be well versed in how to address stereotypical behaviors during meals that are further impeding feeding, such as perseveration and self-stimulatory behavior, as well as how to support sustained attention (Ernsperger & Stegen-Hanson, 2004). Recognition of behavioral feeding and swallowing problems is of equal importance for the SLP to determine how best to approach meals with the child. To do so, the SLP needs to identify the child's triggers, consider how the child reacts to demands being placed upon them, and ensure that demands match the child's receptive and expressive language levels. Thus, professional development needs to include content not only on dysphagia but behavioral principles and interventions for autism as well. It is critical to understand behaviors exhibited by children with ASD and develop a feeding plan that addresses these challenges. The approach for a child with ASD may be quite different from the needs of a child with or without another developmental disability and pediatric feeding and swallowing deficits (Twachtman-Reilly et al., 2008).

Although generally less common of a cause, feeding and swallowing issues in the autism population may be caused by gastrointestinal dysfunction (Herbert & Arrangab, 2006; Rossignol

& Frye, 2012; Vissoker et al., 2015). The incidence of gastric-based dysphagia is anywhere from 9–70% (Buie, Campbell, & Fuchs, 2010), with gastrointestinal issues being more prevalent in children with ASD than other disabilities (McElhanon, McCracken, Karpen, & Sharp, 2014; Vissoker et al., 2015). A review by Williams et al. (2010) suggested that gastroesophageal reflux disease (GERD) occurred in 69% of children with food selectivity issues. Pain from GERD may have led to resistance to eating certain foods (Field et al., 2003). In 33% of instances food avoidance was due to cardiopulmonary diagnoses, 25% of the time it had a neurological basis, 15% of cases were the result of food allergies, 14% structural abnormalities, and 6% gastric emptying issues (Williams et al., 2010). In instances where medically-based feeding and swallowing issues are present, it is essential that the public-school SLP be aware of these challenges and be well-educated on them, knowing when it is appropriate to execute dysphagia intervention in the school, and what feeding program and diet would be safe. The school SLP must know with whom and how often to engage in interprofessional collaboration to ensure this. They must also know how to work within the confines of a strict diet that the child with ASD may be on and have the knowledge and skills to help advance their feeding and swallowing abilities given food limitations (Field et al., 2003).

Regardless of the cause of food selectivity, the public-school SLP should be trained in assessment procedures used to determine the type of food selectivity issues a child may be experiencing, be able to identify the specific challenges a child with ASD faces, and be prepared to implement intervention methods that support the child in accepting a wider range of foods types and varieties. For instance, the SLP must have knowledge and skills about when and how to change textures, types and tastes of foods, and presentation of food and utensils. Observation and interview skills are pertinent, as the public-school SLP may need to observe mealtime

routines at home or at school during lunch and snacks and have a dialogue with teachers and parents to get a sense of feeding behaviors in settings. This allows the SLP to determine environmental modifications and strategies to increase a child's food repertoire in various environments based on the eating demands or sensory aspects involved. Strong observational skills are required to evaluate feeding performance in different settings over time to determine if skills are being transferred to the different settings (Twachtman-Reilly et al., 2008).

Even though there is a remarkable number of children with ASD in schools experiencing feeding and swallowing issues, studies on the cause of these problems remain sparse (Ahearn, Castine, Nault & Green, 2001; Field et al., 2003; Schreck & Williams, 2006; Schreck et al., 2004; Williams, Gibbons, & Schreck, 2005). Of the limited studies available, they were behavioral, psychological, and nutritionally focused. This posed a concern as SLPs play a very critical role in dysphagia management in schools and have limited evidence-based guidance for feeding issues with this etiology, as well as those that are oral-motor or sensory-based (Twachtman-Reilly et al., 2008). Of the sparse literature on oral motor for feeding, most results were inconclusive (Arvedson, Clark, Lazarus, Schooling, & Frymark, 2010; Snider, Majnemer, & Darsaklis, 2011; Walshe, Smith, & Pennington, 2012). Children with ASD present with unique, abstract needs that must be understood in terms of the impact on feeding and swallowing to address dysphagia effectively. Assessment and intervention techniques for feeding and swallowing need to be adapted to account for all presenting characteristics and etiologies (Twachtman-Reilly et al., 2008). When Field et al. (2003) studied children with ASD that had more intricate needs, there was an increased incidence of oral-motor feeding deficits characterized by difficulties producing tongue and lip movements (Page & Boucher, 1998). Public-school SLP's have a responsibility to address oral-motor and sensory deficits by

increasing their students' awareness of food in their mouth, helping them improve their chewing skills for different food types and textures, as well as supporting physicians' diet recommendations to promote safety and prevent choking as chewing skills develop (Edwards & Martin, 2011).

Marshall et al. (2014) highlighted that in the ASD population there was an insufficient amount of systematic reviews on pediatric feeding for public-school SLPs to draw upon for cases they needed to provide dysphagia management for. Over the past decade there has been less than 10 studies to report, with great variability in the intervention methods used for feeding. Although in most cases, whatever treatment approach was used was considered effective for children on the autism spectrum; each approach was tested on a select few individuals making it challenging for SLPs to determine which of the array of methods may be best for the children on their caseload (Ledford & Gast 2006). To further complicate matters, the accuracy of some of these studies could be questioned given that they did not demonstrate social or internal validity (Marshall et al., 2014).

### **Cerebral Palsy**

One of the most commonly occurring neurological conditions resulting in oral and pharyngeal dysphagia is cerebral palsy (CP; Lefton-Greif, 2008). The prevalence of CP across the nation is approximately four out of every thousand school-age children and accounts for almost half of premature children (Lipson-Aisen et al., 2011). CP occurs in 20% of premature infants born between 24 and 26 weeks and in 4% of children born at 32 weeks of gestation (Ancel et al., 2006, Surman, Newdick, & Johnson, 2003). Estimation of the incidence of dysphagia in this medically fragile population is approximately 40% (Gerek & Müzeyyen, 2005). Dysphagia tends to be more significant the more severe a child's CP is (Arvedson, Gosa, Homer,

& Power-deFur, 2016). Therefore, it is imperative to examine the knowledge and skill needs of public-school SLPs working with children with CP, since this is a population that has been understudied with regards to dysphagia. This population has a high frequency of substantial swallowing deficits that requires the expertise of a highly skilled SLP, considering that dysphagia has neurological bases and affects the ability to control the musculature and structures needed for swallowing. This population also commonly experiences aspiration associated with swallowing dysfunction which affects their pulmonary capacity. Breathing issues may lead to fatigue making it challenging to maintain attention to curricular material and impacts upon quality of life (Gerek & Müzeyyen, 2005). ASHA's *Scope of Practice in Speech-Language Pathology* (2007) designated management and effective use of prosthetic and other adaptive equipment, such as tracheostomies and ventilators, as the role of an SLP. Therefore, the school clinician must demonstrate competency in this area, as children with severe cerebral palsy often have coexisting breathing issues requiring use of this technology. The SLP must understand breathing patterns using this equipment as swallowing must be coordinated with breathing (Moskowitz-Kurjan, 2000). O'Donoghue and Dean-Claytor (2008) referred to a qualitative survey study by Manley, Frank and Melvin (1999) which revealed that 52% of SLPs did not feel adequately equipped to manage a child with dysphagia having a tracheostomy tube

Given approximately 90% of children with CP experience oral-motor dysfunction due to deficiencies in oral muscle tone, and many also exhibit sensory-based food texture issues, an SLP needs to be well versed in these areas of practice. This static neurologic condition may result in a regression of swallowing and feeding abilities requiring the school SLP to have knowledge about the process of nonoral feeds through supplemental methods, such as a gastrostomy feeding tube (Lefton-Grief & Arvedson, 2008; Reilly et al., 1996). According to a

parent interview and observation-based survey study of 49 children with cerebral palsy, 80% had received their feedings nonorally at some point, and over 90% had severe oral motor dysfunction as per a standardized assessment of these skills, which highlighted the need for competency in these two domains. Approximately 60% were reported by parents to exhibit dysphagia even prior to being diagnosed with cerebral palsy (Reilly et al., 1996). In this case, the public-school SLP needs knowledge about any preexisting pulmonary, gastrointestinal, and neurological issues that may be affecting feeding and swallowing (Arvedson et al., 2016).

A prospective study was conducted to assess the nutritional status of children with various types and degrees of cerebral palsy by implementing nutritional interventions. Subjects were randomly assigned to the treatment group and compared to age and sex matched controls. The outcomes of this investigation were twofold. Of the 100 children with cerebral palsy analyzed between the ages of one and nine, a majority presented with poor nutritional status. Additionally, oral motor deficits were seen in every child observed and those with spastic quadriplegic cerebral palsy and/or hypotonic cerebral palsy were deemed to have the greatest feeding difficulties affecting nutrition and weight gain. Consequently, school SLPs need to be aware and responsive to the nutrition and hydration needs of these students, which could affect their brain development and academic performance in school (ASHA, 2007; Gangil, Patwari, Ahuja, & Anand, 2001). This includes expertise in ways to increase caloric intake through calorie rich foods and formulas (Arvedson et al., 2016). The prevalence of poor nutritional status has been found to occur even when feeding dysfunction is deemed to be mild (Fung et al., 2002).

According to videofluoroscopic and clinical assessment reports of children with CP examined retrospectively, this condition was commonly associated with silent aspiration. Of subjects reviewed in this study, 97% presented with aspiration that was indeed silent (Rogers,

Arvedson, Buck, Smart & Msall, 1994). The school SLP therefore needs to exercise great caution by being vigilant of soft signs and symptoms, as aspiration is considered a serious condition that may lead to pneumonia, infection, or death. This could pose significant liability to the clinician and put their licensure at risk (ASHA, 2007; Gerek & Müzeyyen, 2005). Given the multifaceted issues experienced by children with CP, a holistic approach to care is recommended. Two case studies of children with medically fragile conditions further outline the complex feeding and swallowing problems children with CP face and the proficiencies needed by the SLP to serve them. These qualifications include having skills in diagnosis, assessment, treatment, and dysphagia team collaboration (Lefton-Grief & Arvedson, 2008). For children with this diagnosis, liquids are more difficult to manage than solids as well as larger boluses. The public-school SLP must recognize this and know that these students need more time to complete their feeding to ensure safety with small boluses of food and liquid. The SLP needs to be versed in direct and indirect strategies to promote oral sensorimotor function, which detect abnormal sensory responses during feeding and use oral and pharyngeal phase management of a bolus. They must be trained in interventions to promote oral sensorimotor function for those with structural or functional anomalies of the oral mechanism (Arvedson et al., 2016).

The public-school SLP must have knowledge in proper seating and positioning during feeding for children with CP and be able to demonstrate to caregivers appropriate food textures and sizes in addition to drinking techniques, volume, consistency, and cup type to use. It is imperative that they consider cognitive status, motor skills, muscle tone, and reflex development during assessment and intervention regarding positioning and treatment approaches. Children with hypotonia may require different modifications than those with hypertonia. Understanding respiratory changes is vital to ensuring these children are not demonstrating signs of distress



during dysphagia management (Arvedson et al., 2016). Benfer, Weir, Bell, Ware, Davies and Boyd (2015) studied preschool children with CP, and they found that 67.7% experienced pharyngeal dysphagia that was influenced by limitations in gross motor skills. This research was particularly interesting as it offered data estimating these deficits in the general population of children with CP, which would be managed by the school SLP in coordination with the physical and occupational therapist on the case.

### **Prematurity**

Due to greater knowledge surrounding feeding and swallowing and medical and technological innovations more children who are premature or have low birth weight are surviving and thriving. Of the children in the United States born premature, a staggering 40% present with feeding and/or swallowing deficits. A study looking at 90 children born premature concluded that oral-motor issues were the cause of feeding problems in 38% of cases. These children demonstrated challenges in accepting new textures of foods as well as engaging in proper movement patterns of the lips, tongue, and jaw needed for eating (Sanchez, Spittle, Slattery, & Morgan, 2016). Although much of the literature on prematurity focuses on dysphagia issues in infancy following short hospital stays in the NICU, earlier medical issues have been noted to lead to persistent dysphagia issues well into the school age years. Particularly respiratory-related challenges, such as bronchopulmonary disease, could result in respiratory-swallow incoordination or frequent aspiration for extended periods of time. Also, premature children with heart issues are vulnerable to having gastrointestinal problems and feeding and swallowing disorders (Lefton-Grief & Arvedson, 2016).

To work with children who have a history of prematurity, the school SLP must have a thorough background in medical and health management to be able to make recommendations

for feeding and swallowing that are aligned with ASHA Code of Ethics (2016) and clinical practice guidelines. They also need the knowledge and skills to engage in ongoing collaboration with professionals and families to meet each child's global needs and support their overall health, well-being, and nutrition. Being well versed in recognizing clinical signs of aspiration when evaluating a child's feeding skills is paramount to promoting a child's safety during meals. The school SLP must understand when a child is ready to eat by mouth and what diet textures are appropriate given their oral abilities and swallow function. Knowledge and skills in oral-motor assessment and treatment are essential for those cases where the root of dysphagia is motor-based (Lefton-Grief & Arvedson, 2016). Unfortunately, a barrier faced by school SLPs when working with this population is limited scholarly research on feeding and swallowing treatments to guide in managing these cases safely and effectively. This holds especially true for oral-motor treatments (Sanchez et al., 2016).

### **Down Syndrome**

Behavioral feeding issues and dysphagia are common in children with Down syndrome (Homer, 2008; Homer, Bickerton, Hill, Parham, & Taylor, 2000). They may experience oral-motor and sensory issues. Children with Down syndrome could be placed in special education classrooms such as self-contained or multiply disabled classes within a public-school district (Homer & Carbajal, 2015). In working with this type of case in a school, the SLP needs to ensure the child is well hydrated and receiving appropriate nutrition to be able to participate in the curriculum and learn (ASHA, n.d.; Homer, 2008; Homer et al., 2000). They also need to aid in managing textures of food appropriate for their age. To encourage generalization of feeding skills to the home setting, the public-school SLP needs to train parents and engage in collaboration throughout the management of the child's feeding and swallowing needs (Angell,

Bailey, Nicholson, & Stoner 2009). The SLP must have a protocol for referring students with feeding and swallowing problems, a clear process for student assessment and interviewing families for case history information, a developed feeding plan for classroom staff to ensure safe eating and swallowing, intervention procedures, and a process for training workers in the cafeteria.

### **Traumatic Brain Injury**

According to ASHA's 2016 Schools Survey, 17.1 % of public-school students with dysphagia had experienced a traumatic brain injury. However, very limited articles exist on feeding and swallowing for this population. This poses a significant challenge for school SLPs who are required by ASHA to draw upon evidence-based literature as a guide to make practice decisions for dysphagia management in schools.

### **Service Provision Considerations**

School settings offer unique challenges for SLPs, particularly for those whose previous experience with dysphagia had been in a medical environment. Research suggests notably less administrative support exists for this service within the school dynamic due to programmatic, financial, cultural, and ethical constraints. As a result, fewer environmental resources are available in schools, including reduced access to feeding equipment and less opportunity to collaborate with medical professionals. SLPs must rely heavily on their personal clinical expertise. This highlights why having adequate education and training in pediatric dysphagia is so integral (Moskowitz-Kurjan, 2000). A widespread theme among much of the available literature is that beyond the barriers faced by limitations in cooperation of school districts, often insufficient guidelines and measures are in place for how to manage dysphagia within an educational framework and that presents an ethical dilemma for SLPs (Bailey et al., 2008; Owre,

2001, 2006). Based on a survey by Hutchins et al. (2011), 46.2% of those who completed the questionnaire strongly disagreed that appropriate protocols were in place for minimizing dysphagia risks in public schools (Hutchins et al., 2011). These issues, coupled with the ongoing concerns and inquiries about the appropriateness to engage in feeding and swallowing in public schools given the overall liability, costs, and safety considerations, have caused great concern and thus provides a rationale for investigating this topic more extensively to determine the level of preparation of school SLPs to provide dysphagia services (Moskowitz-Kurjan, 2000).

Ongoing disagreements as to the specific settings that are appropriate to address swallowing problems, has led to exploration through empirical research to gain further clarity. In a focus group study that rated the impressions of 33 school-based SLPs about whether dysphagia management should be a service provided in schools, Bailey et al. (2008) found qualitative evidence of both apprehension and resistance from SLPs to manage students' dysphagia needs in many cases. The notion in several instances was that dysphagia could be best addressed within a medical setting. Trepidation over the risk of a student choking or aspirating was identified as a primary source of concern (Bailey et al., 2008). This trend was found among more seasoned clinicians who were well past graduation, whereas more recent graduates were more likely to report that dysphagia should be within the scope of the school SLP (Hutchins et al., 2011). An outcome of another qualitative focus group study revealed reports of school SLPs expressing challenges in modifying the style of dysphagia practice from a medical to an educational dynamic (Bailey et al., 2008).

According to Bailey et al. (2008), Kruegler and Conlon in 2006 conducted a survey on administrators in public-school districts and medical clinics in Wisconsin. A comparison of the results indicated that the administrators in healthcare generally expected their SLPs to be more

equipped to handle dysphagia needs than in the school setting. Of 17 school districts 13 were not offering swallowing management, and the opinion of many administrators was that this was not an educational but more of a medical problem. These administrators reported that not addressing feeding issues in the school significantly reduced liability on both the district and the clinician who would provide the service. It is remarkable that only one of the districts offering dysphagia services had training resources available (Bailey et al., 2008).

Given the delicate and complex nature of swallowing and feeding issues in medically complex populations and the safety and nutritional issues associated with dysphagia, it is pertinent to determine the magnitude of confidence and degree of expertise of school SLP delivering dysphagia assistance in schools. According to the findings of a descriptive survey conducted by Owre in 2006, it was discovered that the three most common concerns of SLPs working with students with feeding issues in schools were (a) lack of education and experience with dysphagia, (b) difficulties in determining educational relevance, and (c) concerns over liability. Because previously dysphagia services had been performed solely in the medical realm, including hospitals and rehabs, many SLPs based in schools had never worked in a medical environment and therefore had not had any prior exposure to managing swallowing and feeding difficulties. Several reported having taken on roles outside of the scope of their qualifications, based on limited knowledge of pediatric dysphagia. Again, this poses a substantial concern, especially when feeding individuals with more acute forms of cerebral palsy who are medically fragile (Owre, 2006).

### **Dysphagia Education and Assurance Levels**

O'Donoghue and Dean-Claytor (2008) analyzed perceptions of self-confidence and level of training of school SLPs in providing intervention for dysphagia. Benchmark measurements

included the amount of classroom-based training they had previously received and the extent to which they had hands-on exposure working with swallowing issues. For purposes of this research, quantitative information was requested from 222 school-based SLP clinicians selected at random in Virginia and bordering states using a pilot survey developed by O'Donoghue, Creel and Jones (2004). The data collected from the 38% who responded highlighted significant to moderately robust inverse relationships between levels of continuing education in dysphagia following graduation and self-reports of confidence in treating feeding and/or swallowing issues. The greatest correlations were found regarding the degree of confidence and the scope of continued professional development activities attended ( $p = .001$ ,  $r = -.457$ ), as well as how recently they had received training in swallowing management ( $p = .001$ ,  $r = .453$ ). Lower levels of confidence were noted by school SLPs who had obtained more extensive continuing education whereas those with limited training indicated much higher self-assurance. For those clinicians who were less prepared, these results underscored some discrepancies in awareness of their abilities (O'Donoghue & Dean-Claytor, 2008). Another assumption made was that the more training an SLP received, the more cognizant they became of their limitations in expertise (Hutchins et al., 2011). Interestingly however, findings suggested that those SLPs who received professional development in dysphagia within the past 2 years rated higher levels of self-confidence than those whose continuing education was less recent. There was a statistically significant moderately strong positive correlation between these two variables. Also, a statistically significant positive relationship was observed between degree of confidence and graduate coursework completed as well as caseload experience with dysphagia. SLPs who had more hands-on experience with students and had academic courses in their masters' program had greater self-confidence. Based on the rating scale implemented, 76% of subjects reported low

confidence levels. There was a higher degree of assurance found in therapists with more current training in this area. For example, more recent SLP graduates in public schools reported higher confidence levels than those who graduated years earlier. The results indicated a significant weak relationship between confidence levels and time since graduation. These outcomes highlight the value of instituting current, evidence-based dysphagia training for all public-school SLPs to foster competency and self-assurance to adequately meet the challenges faced by school students with feeding and swallowing problems as well as to promote students' health and educational performance (O'Donoghue & Dean-Claytor, 2008).

Another recent turning point in pediatric dysphagia research was a descriptive, qualitative survey of school SLPs in Vermont. The rationale for this study was to shed further light on patterns of confidence with dysphagia of SLPs based on their extent of preparation and outlook on attending to swallowing needs in the school environment. A thorough analysis of symbiotic relationships and overlap in attitudes and opinions, between those who had previously worked in a medical setting and those that had not, was conducted to see if medical training influenced point of view. Interestingly, opposite results were found compared to the study by O'Donoghue and Dean-Claytor (2008) regarding the correlation between confidence and the amount of prior dysphagia coursework. In the Hutchins et al. (2011) study, enhanced confidence was directly associated with a greater amount of course instruction. Furthermore, in contrast to the findings of O'Donoghue and Dean-Claytor, Hutchins et al. identified no significant differences in confidence levels based on years post graduate courses in dysphagia or prior clinical experience in a medical model. These inconsistencies in outcomes pose a significant limitation, emphasizing the necessity for additional research to clarify the discrepancies (Hutchins et al., 2011).

In the survey of school-based SLPs conducted by Hutchins et al. (2011), the majority of SLPs were found to not be confident in their ability to provide dysphagia services. This study is among just a few in the United States conducted to date on comfort levels with the required roles of an SLP providing dysphagia services in public schools. Given that dysphagia management involves a more significant degree of risk when compared to other areas within the domain of an SLP, and the extensive expertise needed by an SLP to safely and effectively manage these cases (Mabry-Price, 2014), further study is needed to gain a more comprehensive understanding of the types of dysphagia tasks public-school SLPs are responsible for, the level of preparation and confidence of SLPs to perform these responsibilities and their subsequent learning needs (Marshall et al., 2014).

There are only a few articles on ASD and dysphagia in schools that highlight the roles and responsibilities of the SLP when this is the primary population they serve with feeding and swallowing problems (ASHA Schools Survey, 2016). Concerningly, clinicians working with children with ASD and feeding and swallowing difficulties have indicated low levels of confidence in their knowledge of this area and perceived therapy success. This further supports the need for additional inquiry into this domain to help identify and establish practice guidelines (Marshall et al., 2014).

An international study investigated the perceptions of SLPs on their degree of training, skills and confidence in dysphagia, and supports provided within the schools they worked. However, this study used a sample size of 30 SLPs in Malaysia and Queensland, limiting the ability to generalize the results to the general population of SLPs. Their study used a cross-sectional design as the primary framework, and the current study was built upon this design. The SLPs surveyed were working in government hospitals and health settings with dysphagia which



is very different to the scope of practice involved in providing this service in schools. Additionally, the standards for dysphagia practice in Queensland and Malaysia may vary from those outlined by ASHA (2002) for the United States as well as guidelines for minimum competency levels required. Currently, Malaysia and Queensland do not have formal guidelines for dysphagia practice like ASHA provides. Furthermore, Malaysia and Queensland solely provided undergraduate training in SLP in contrast to the masters' degree requirement in the United States, making it difficult to use this research as a potential representation of levels of preparation in dysphagia of SLPs in the United States. The areas that were identified as lacking by Malaysian SLPs in healthcare were college preparation and training in dysphagia at work. It is challenging to apply this data to SLPs working with dysphagia in public schools in the United States. Similarly, the fact that more than 90% of SLPs in Queensland indicated feeling adequately trained in dysphagia management through university coursework and mentorship support at work as compared to those in Malaysian healthcare environments, who indicated significantly less preparation, does not confirm what SLPs in a school setting need to confidently and competently provide dysphagia services (Kamal et al., 2012).

To investigate the degree of dysphagia training received at the graduate school level, Moskowitz-Kurjan (2000) had 200 SLPs working in a preschool program in Maryland complete a qualitative survey instrument. The outcomes were remarkable, indicating that out of the 72 graduate programs represented by these 200 subjects very few had any formal coursework in dysphagia prior to graduating. Of those who did have master's level courses for many the focus was mainly on adult dysphagia not pediatrics. The literature suggests that a lack of evidence-based training in pediatrics could have negative implications on quality, safety, and accuracy of service delivery. For example, several subjects reported that they sought out training workshops

for dysphagia only after they were presented with students having these needs on their caseload. The data provided evidence that these SLPs did not judge themselves to have the necessary knowledge and skills to make sound clinical judgments when initially providing this service. The study by Bailey et al. (2008) study also showed that according to school-based clinicians' opinions there was a lack of education and dynamic training in the domain of swallowing. Experiential limitations in both working with and learning about best practices with dysphagia populations in graduate school has led to discomfort and reluctance to address these issues in schools (Moskowitz-Kurjan, 2000).

Given the statistics on the prevalence of dysphagia within schools in the United States, research conducted by Kamal et al. (2012) sought to obtain a large nationwide sample of public-school SLPs working with dysphagia. The intention of the researchers was to get a global perspective of SLPs' confidence levels and perception of their prior feeding and swallowing training. The purpose of this investigation was to obtain direction for meeting ongoing education and mentorship needs of SLPs. The findings of this research offered some insight into potential training models to examine, such as previous coursework in dysphagia in undergraduate and graduate studies and ongoing professional development. According to the *Council for Clinical Certification in Audiology and Speech-Language Pathology (CFCC) 2014 SLP Standards for Certification* and the *2016 CFCC revisions*, students "must demonstrate knowledge of communication and swallowing disorders and differences, including the appropriate etiologies, characteristics, anatomical/physiological, acoustic, psychological, developmental, and linguistic and cultural correlates." With regards to swallowing, they must know "oral, pharyngeal, esophageal, and related functions, including oral function for feeding, orofacial myology." The Council for Clinical Certification in Audiology and Speech-Language Pathology (CFCC) from

ASHA indicates that coursework addressing this should happen mainly at the graduate level (Council for Clinical Certification in Audiology and Speech-Language Pathology of the American Speech-Language-Hearing Association, 2013). The *2020 CFCC Standards for Certification* lists the same language. Continual professional development in domains within the scope of practice of SLP is also mandated to maintain certification through ASHA. An adequately trained professional is found to have a positive effect on overall intervention outcomes (Kamal et al., 2012; Yolsal et al., 2004), and conversely insufficient preparation is noted to promote negative treatment results (Meriweather, 2006). This underscores the need to validate the perceived level of educational preparation, training and confidence of SLPs providing dysphagia services in public schools.

Power-deFur (2000) denoted the critical nature of being thoroughly prepared in the domain of feeding and swallowing to help prevent choking and aspiration, and she stressed that it was the responsibility of the SLP to explore dynamic educational opportunities to foster their level of knowledge and aptitude in pediatric dysphagia. It is in major violation of the *ASHA Code of Ethics* to provide feeding and swallowing services without having been adequately trained, and it puts the health of the student in imminent danger (Hutchins et al., 2011; Power-deFur, 2000). Thus, SLPs should only provide services for which they are competent. This could be determined by the extent of educational training and clinical exposure (ASHA, 1994; Power-deFur, 2000). According to Benner (2001), competency could be defined as being mindful of the long-term outcomes of their clinical decision regarding dysphagia management for their students. It is the responsibility of the SLP to engage in complex and logical analysis at a conscious level and to have the skill level to provide effective dysphagia services. Lack of competency could have profound consequences, including putting a child at risk of choking, pneumonia or death. If

the SLP is not properly trained, the role of providing dysphagia services may fall to other school staff such as a nurse, an occupational therapist, a teacher, or a paraprofessional, who may lack the education and training to offer this service and would put the child at a serious health risk (Power-deFur, 2000).

### **Current Trends**

Considering that accountability for swallowing disorders in schools is a more recent advancement, there is substantially limited empirical research to date on trends in the nature of swallowing responsibilities required in schools, particularly the chief tasks (Hutchins et al., 2011). This review of literature highlighted current information available on dysphagia management in public schools and thus where more thorough investigation is warranted. Owre (2006) was one of the few researchers to seek insight into these professional practice markers and established what the training needs of SLPs were. She conducted a survey of affiliates of ASHA swallowing and school-based groups (ASHA SIG 13 and 16) representing 80% of the United States. Based on the descriptive research findings, the most common responsibilities revealed across subjects were provision of dysphagia intervention (42%), training and education on swallowing management strategies and safety precautions (39%), gathering and reviewing medical reports and documentation (37%), making recommendations for medical referrals (35%), and engaging in interprofessional dysphagia service planning and collaboration with other health care individuals on the feeding team (30%). Of those school-based SLPs surveyed, 26% reported that the school-based feeding team collaborated with a child's dysphagia team in the healthcare arena to track their overall dysphagia status and developed a care plan that was patient-centered and considered their global needs, and that their role also included overseeing and implementing dysphagia intervention. One fourth of these school SLPs noted that they were

responsible for getting physician clearance prior to engaging in dysphagia management and providing consultation services such as determining necessary feeding accommodations, developing dysphagia precautions for students, educating the school team on these, and managing consistency of implementation. The least prevalent activity noted by 14% of respondents, was creating swallowing protocols across the school district (Owre, 2006).

The perspectives of SLPs on the breakdown of roles and clinical functions were further investigated by Hutchins et al. (2011) and supported some of the results from Owre's research in 2006. The highest percentages were reported in several of the same categories ranging from 13–17% with SLPs additionally highlighting consultation, follow-up, and provision of environmental safety accommodations as primary responsibilities in dysphagia management. Regarding collaboration with the feeding team, 96% of respondents stated that not having all members of the feeding team on-site at their school was a constraint. However, differences evident in this study compared to Owre were reports of lower levels of responsibility for training and education of staff and caregivers in dysphagia as well as decreased percentages in all categories. It was inferred that this disparity may have been related to variability in survey design as well as the location of SLPs sampled and the incidence of dysphagia. Changes in legal statutes and transformation efforts in education may have also contributed consequently (Hutchins et al., 2011).

### **Dysphagia Training Protocols in Public Schools**

In response to the empirical evidence available in the literature indicating that education of SLPs in dysphagia detection and management is essential in schools, the St. Tammany Parish School system in Louisiana pioneered an interprofessional, district-wide dysphagia training program at the school level in 1996 to promote safe eating. ASHA's 2007 *Guidelines for Speech-*

*Language Pathologists Providing Swallowing and Feeding Services in the Schools* mandated interdisciplinary team collaboration to achieve this goal (Homer, 2009). A comprehensive narrative investigation of prior qualitative studies investigating the perceived training needs of school speech clinicians was completed and then utilized as a reference point for designing the program. Homer (2008) emphasized that the foundation of this dysphagia protocol was influenced by the research outcomes of Arvedson and Brodsky (2002), which reported the benefits of team-oriented approaches for dysphagia. The program encouraged cross-disciplinary team development and knowledge to manage swallowing dysfunction holistically (Homer, 2008). Prevention of malnutrition and subsequent growth issues that could negatively effects learning was also targeted (Homer et al., 2000). Furthermore, to build familiarity in pediatric swallowing measures feeding team members attended in-service presentations. In a survey study to determine the impact of this swallowing management framework, observations by teachers and parents in the Louisiana district indicated positive overall improvements in students' eating skills, attention, and demeanor Furthermore, noticeable weight gain and less frequent illnesses and absences were apparent. St. Tammany Parish Schools is one of the only programs to date for which descriptive research on outcomes has been conducted. Schools in Texas, Virginia, and Florida are reported to also have programs in place, but there is no hard evidence demonstrating the efficacy of their programs (Homer, 2004).

Based on the successes reported in the Louisiana district, future recommendations have been made for developing dysphagia programs. These include creating a task force comprised of SLPs, occupational therapists, nurses, and teachers to educate administrators and service providers on the importance of providing feeding and swallowing services in public schools, being faithful to implementation guidelines, and offering ideas on how to best manage

swallowing given the dynamics of each school district. Defining educational relevance and the school's role according to legal mandates for administration is reported to be beneficial in encouraging appropriate and efficient service provision. Providing a review of safety issues associated with dysphagia for all individuals working with students with swallowing needs may encourage more informed decision-making. Types of training suggested for all staff and administrators include education on the signs and symptoms of swallowing; problems, policies, and procedures for feeding; and definitions of the roles of each team member in management. Additionally, the implementation of courses in CPR and the Heimlich maneuver to be prepared in the event of choking emergencies have been proposed. Presenting SLPs with opportunities to participate in in-district or outside continuing education events on diagnosing and treating dysphagia to encourage best practices is also highly advised (Homer, 2008, 2009).

The director of special services at the district level and building principal must ensure the safety and health of all students in the school and provide an environment that maximizes their readiness to learn. Good nutrition and student wellness are vital to brain development and learning in school (ASHA, 2010; Homer et al., 2000; Lefton-Grief & Arvedson, 2008,). Given the responsibility of the school administrators to adhere to the IDEA 2004 law and provide both "related services" (American Federation of Teachers, 2009) and "school health services" for children with feeding and swallowing issues, it is imperative to ensure SLPs providing this service are highly qualified to meet these demands (34 CFR 300.34 (c) (15)).

Because of the dangers of choking and aspiration associated with dysphagia, it is essential for school administrators to gain a comprehensive understanding of the abilities of SLPs to provide dysphagia management services in their school and district. This includes considering trends in confidence across the dysphagia clinical competency areas to gain

perspective on areas where additional supports, education, and mentorship may be needed. For example, it is important to ensure that students are receiving proper nutrition for brain development and learning when at school. With this knowledge, directors of special services and principals have perspective on the types of knowledge and skill competencies that the SLPs they hire should possess in the domain of dysphagia.

### **Future Directions for Schools-Preparation in Dysphagia Management**

Since research exploration into dysphagia training and management in schools has been a more recent phenomenon, there is limited literature available. The vast amount of studies conducted on professional instruction and training in the domain of preliteracy can be used as a point of reference for cultivating developments in feeding and swallowing. Preliteracy is an area that is significantly more advanced in the extent and variety of training and education offered, and is a leader given the overwhelming research support for the efficacy of its current programs. Research suggests that many of the educational growth opportunities for SLPs on preliteracy development have been advantageous in enhancing student outcomes. An experimental study by Cabell et al, (2011) is a prime example of the positive impact that educating classroom instructors on teacher responsivity tactics to use in preschool classrooms had on children's language and vocabulary growth (Cabell et al., 2011). Procedural frameworks that were recommended for SLPs implementing an embedded—explicit emergent literacy treatment program for at risk preschool and kindergarten children similarly resulted in great benefits (Kaderavek, 2004). Furthermore, based on a meta-analysis of existing literature, Justice, Invernizzi, and Meier (2002) proposed ideas and rationale for creating and putting into practice a successful early literacy screening protocol. These are just three examples of why it could be



beneficial for SLPs to have empirically based guidance on the provision of swallowing services in schools.

## **Conclusion**

It is abundantly clear that management of dysphagia has become prominent in public school and must be safely and properly addressed by an SLP given the potential life-threatening aspects of this condition. As the incidence of students with feeding and swallowing issues in schools continues to rise exponentially, a rapid transformation of roles in feeding and swallowing and an increase in responsibilities on the part of the school service provider has taken place. Given the extensive knowledge and skills that are required to be proficient in this domain, discovering public school-based SLPs' confidence levels, potential educational training needs, as well as background experience in dysphagia would be a major step towards ensuring quality service provision for feeding and swallowing problems. Gaining perspective on the competencies that are integral to successful dysphagia management helps provide a transparent pathway for establishing more dysphagia training paradigms that could offer school-based SLP clinicians the direction and support needed to encourage consistency, confidence, excellence, and success in their professional practice.

## CHAPTER 3

### METHODS

#### **Theory and Study Design**

A prior study by O'Donoghue and Dean-Claytor (2008) offered initial evidence that many public-school SLPs had low levels of confidence in providing feeding and swallowing services; whereas those who indicated high self-assurance often did not have the needed prerequisite training to properly handle dysphagia. This underscores the need for further examination of the assurance and preparedness of school-based SLPs given they play a significant role in these cases. One of the primary foci of this descriptive survey study with a quantitative, cross-sectional design was to investigate the extent of educational training and experience of public-school SLPs in the domain of dysphagia, whether they had students with feeding and swallowing (dysphagia) issues on their caseload or not. Dysphagia training was defined as having the knowledge and skill set required to manage feeding and swallowing in an educational setting (ASHA, 2002, 2007).

This study is an extension of research conducted by Hutchins et al. (2011), O'Donoghue and Dean-Claytor (2008), and Owre (2006). It intended to gain a more comprehensive, universal understanding of the opinions of public-school SLPs about their level of competency with regards their responsibilities for feeding and swallowing service provision in public schools (ASHA, 2002, 2007). A chief objective of this research was to examine the overall level of preparation and confidence of SLPs, as well as pinpoint specific areas of feeding and swallowing (dysphagia) management for which more training may be needed. This was determined based on the reported assurance levels of public-school SLPs for the dysphagia clinical competencies as well as analyzing their professional experience and demographic characteristics.

Although there is some research providing evidence that supports specific considerations and common feeding and swallowing characteristics for certain special needs populations, there are no studies to date that have addressed the accountability of public-school SLPs for feeding and swallowing, their perceived degree of confidence in providing feeding and swallowing (dysphagia) management across associated roles and responsibilities, or potential training needs specifically in dysphagia. This provides rationale for this study, which concentrated on these aspects. Investigating this phenomenon yielded valuable and significant data that are used as a guide to determine if further instruction and/or experience in dysphagia management is warranted based on reported assurance levels and identified professional experience in this area of practice. Confidence and competency are necessary to make sound professional judgments and engage in best practices that promote optimal feeding and swallowing outcomes for students with special needs. The results yielded from this study offer evidence for the need of a standardized dysphagia training protocol in public schools.

This quantitative survey research sought to identify if the independent variables (age, race, gender, ethnicity, work location, having ASHA certification, years of experience in the field of SLP, years of experience in public schools, experience working with feeding and swallowing in schools, previous dysphagia experience, longevity working with pediatric dysphagia, feeding and swallowing experience under the direction of a mentor or when completing their clinical fellowship, swallowing coursework in graduate school, professional development experience in dysphagia, the number of feeding and swallowing students on caseload, and perceived administrative and environmental supports for feeding and swallowing management) directly influenced the dependent variable: perceived confidence levels of public-school SLPs for the different aspects of dysphagia management they provided. In addition to

being based on Bandura's (1977) self-efficacy principles, this study was rooted in critical social theory with a deductive framework and was intended to explore in-depth societal trends in demographic and experiential factors through categorical analysis and determine potential correlations (Gall, Borg, & Gall, 1996). Gaining insight into this phenomenon by surveying and interviewing participants through constructivist-inquiry based methods led to this discovery (Creswell, 2009).

### **Survey Instrument (Materials and Data Collection)**

To examine the research questions, data were gathered from study participants through a descriptive survey designed with a rating scale and questionnaire. The study was approved by Seton Hall's Institutional Review Board (see Appendix A). The instrument had a cross-sectional design, in which data were gathered at only one point in time (Creswell, 2009). The survey included collecting data on trends in participants' roles and responsibilities in dysphagia management (the control variable) for the four major regions of the country, the Northeast, Midwest, West, and South (U.S. Census Bureau, 2015). It included their participation in: (a) assessing appropriate oral-motor structural development and function for eating, (b) conducting a feeding and swallowing evaluation, (c) identifying normal versus abnormal swallow that was nonfunctional, (d) recognizing signs and symptoms of aspiration, (e) diagnosing dysphagia, (f) making recommendations for appropriate diet or modifying a diet, (g) fostering nutritional status, (h) promoting safe eating and swallowing, (i) determining if it was ethical and educationally relevant to provide dysphagia services for students, (j) providing dysphagia treatment services, (k) engaging in team collaboration with nurses and school staff, (l) engaging in team collaboration with other medical professionals, (m) interpreting outside Modified Barium Swallow Studies (MBSS) studies and feeding reports from other professionals, (n) analyzing

case history information and determining influence of feeding status, (o) training caregivers, and (p) making referrals for medically-based swallowing evaluations.

The specific responsibilities involved in feeding and swallowing (dysphagia) management that were selected for Part II of this survey, were based on the swallowing competencies outlined in ASHA's 2002 document, *Knowledge and Skills Needed by Speech-Language Pathologists Providing Services to Individuals with Swallowing and/or Feeding Disorders*. Additionally, the primary roles highlighted by SLP subjects in results from studies by Hutchins et al. (2011), O'Donoghue and Dean-Claytor (2008), and Owre (2006) drove decisions on what dysphagia roles to include. In this quantitative descriptive survey study subjects were required to indicate a "yes" or "no" response for the roles that they were responsible for. Respondents were then prompted to rate their perceived confidence level for each of the 17 feeding and swallowing (dysphagia) management competencies using a 1–5 rating scale (from least to most confident). This was designed to allow for greater comparisons, through a larger scale data analysis, than Hutchins et al. and O'Donoghue and Dean-Claytor by identifying trends in confidence for individual feeding and swallowing competencies versus general confidence for dysphagia management.

Participants were first asked to complete a demographics section on the questionnaire that includes both "yes" and "no" questions and open-ended constructed inquiries about their background and professional experience. In the professional experience section, respondents were asked: if they had ever worked with dysphagia in a medical setting, early intervention, or private practice; if they had provided any dysphagia services prior to managing feeding and swallowing cases in a public school; how many students they had with dysphagia on their school caseload; and what their length of exposure working with dysphagia in a public school was.

Additional inquiries in this section included indicating how many years they had been practicing as an ASHA-certified SLP, if they had relevant coursework in dysphagia post bachelors, the number of classes they took, the quantity of continuing education in feeding and swallowing they had received, the presence and type of administrative support “they did” or “did not” have to provide for dysphagia management, and the dysphagia resources they had available to serve students in this area. Background demographics included gathering information on age, gender, ethnicity, race, state of residence, and the type of geographic setting the SLP worked in (i.e., rural or urban). These independent variables were selected for the demographic section to get a detailed overview of the respondent pool. In addition, it allowed for the identification of any relationships between an SLP’s background and professional experience and the roles they played in feeding and swallowing management in public schools as well as their perceived confidence for the 17 dysphagia roles.

The overall subject matter included in this survey was determined based on the research that was conducted by O’Donoghue and Dean-Claytor (2008) and Hutchins et al. (2011). This study expanded upon the scope of variables examined in previous studies which targeted prior continuing education on feeding and swallowing or exposure in a medical setting to dysphagia. While Hutchins et al. (2011) evaluated trends in length of time since graduation from a masters’ program, for the current study it was determined that years of experience working as an ASHA certified SLP may be a more representative reflection of field exposure. Furthermore, specific survey questions were chosen based on the feeding and swallowing concerns and needs of public-school SLPs reported in the studies by Hutchins et al. (2011) and O’Donoghue and Dean-Claytor (2008). They were also selected to get further clarity on discrepancies identified in O’Donoghue and Dean-Claytor’s research where respondents reported having high confidence

levels but they lacked appropriate dysphagia exposure and training. Questions in the demographic section that sought to identify the level and type of administrative support for feeding and swallowing services in public schools came from concerns in the study by O'Donoghue and Hegyi (2009), which highlighted inadequate opportunities for professional development in dysphagia, and apprehension by school leaders to support this area based on perceived liability. Critical considerations when working with children with special needs who have feeding and swallowing issues were also accounted for in the survey design. Gathering data on SLPs who provided dysphagia services in public schools and those that didn't was intended to see if there were differences between the two groups in ratings of confidence for the 17 defined dysphagia roles based on participation. The format was also intended to confirm the current roles of an SLP in feeding and swallowing management in a public school and their confidence across tasks to provide direction for training in dysphagia.

The survey was developed through Qualtrics and questions were primarily multiple choice and text entry with a matrix table to gather data on ratings of confidence for the 17 feeding and swallowing (dysphagia) roles. Some of the survey questions required a forced response, whereas others depended on a participant's response, other questions would become available for them to complete using the response logic feature. For example, if a participant responded "yes" they had dysphagia experience in a medical setting, they would then be directed to a subsequent question asking them to list how many years of experience they had in this setting. If they had answered "no" to this question, this additional inquiry would not be visible to them (Creswell, 2013). The survey instrument is found in Appendix B.

## **Participants**

To examine nationwide trends across public schools in feeding and swallowing (dysphagia) management and the perceived confidence of SLPs for various roles and responsibilities data were collected randomly from ASHA's certified SLPs within the United States who were employed primarily in public schools. SLPs who provided dysphagia management in public schools and those that did not both qualified as candidates to complete the survey. For those SLPs who had feeding and swallowing cases in public schools, the students that they attended must be oral feeders. The survey, created through Qualtrics, was posted on the forums for ASHA SIG 1 (Language Learning and Education), SIG 13 (Swallowing and Swallowing Disorders), and SIG 16 (School-Based Issues). ASHA certification was required to gain membership to these group. Therefore, only SLPs who were members of any of these three special interest groups had access to the forums to participate in the survey, and thus controlling for only ASHA certified subjects. As of December, 2018, SIG 1 had 6,770 affiliates, SIG 13 had 11,299 members, and SIG 16 had 6,953 members, giving a total of 25,022 members for all three SIGs. When the number of ASHA SIG affiliates was calculated in January, 2019, there were 7,125 members in SIG 1. Of the total 7,125 affiliates, 4,846 of the members belonged to only SIG 1 (68% of the total), 2,177 belonged to SIG 1 and either SIG 13 or 16 (30.6 % of the total) and 102 belonged to SIG 1, 13 and 16 (1.4% of the total). In SIG 13, the number of total affiliates was 11,772. Of the 11,772, 11,078 belonged to only SIG 13 (94.1 % of the total population). There are 592 members that belonged to either SIG 1 or SIG 16 (5.0 % of the total affiliates) and 102 members belonged to SIG 1 and SIG 16 in addition to SIG 13 (0.9% of the total). In SIG 16, the total number of affiliates was 7,303. Of the 7,303, 5,254 only belonged to SIG 16 (71.9% of the total population in this SIG). An additional 1,947 belonged to SIG 16 and



either SIG 1 or SIG 13 (26.7% of the member pool in the SIG), and 102 (1.4%) belonged to SIG 16 as well as SIG 1 and SIG 13. Resulting in a total pool of 21,178 potential study respondents.

The online community for members of SIG 1, 13 and 16 was accessible by permission from ASHA. A description of the research study was posted on the online forums, along with a direct link to the survey containing instructions for completion. The description of the survey included an explanation of the purpose and qualification requirements to participate. Informed consent was provided by participants clicking on the survey, with an attached disclaimer about how the results were going to be used and reported (see Appendix C). The survey was posted once a week from June through August, 2018, to promote a high response rate. The second phase of recruiting subjects included sending direct emails through the membership directory to affiliates of SIG 1, 13 and 16 from September through November, 2018. Using the most current United States Census Bureau data from February, 2015, 50% of the states in each of the four regions of the nation were randomly selected (Northeast, Midwest, South, and West) and all members of SIG 1, 13 and 16 in each of these states were directly emailed the link to the survey with the instructions. These states included the Northeast (Connecticut, New Jersey, Pennsylvania, Massachusetts, Maine), Midwest (Illinois, Indiana, Kansas, North Dakota, and Michigan), South (Delaware, Florida, Georgia, Arkansas, Kentucky, Louisiana, Alabama, Maryland, Texas), and the West (Alaska, Arizona, California, Colorado, Hawaii, Idaho). Direct emails were sent to a total of 775 SLPs in the Northeast, 546 in the Midwest, 702 in the South, and 709 in the Western states. This was a total of 2,732 emails. Since SIG members could have seen the survey both on the online forums and through direct email, it was indicated that the survey could be completed only once. The method for dispersing the survey was a strategy employed to allow a robust sample of SLPs from various demographic environments to be

obtained that was more representative and heterogeneous than in previous studies. Thus, encouraging findings that were larger in scope and could be generalized to broader audiences. Additionally, it would provide the opportunity to analyze trends in feeding and swallowing roles and responsibilities conducted in public schools in the different regions of the United States. For this study, distribution of the survey through online postings on the ASHA SIG forums and direct emailing through the ASHA membership directory served as the independent variable, and participation in the survey acted as the dependent variable.

### **Reliability and Validity**

To ensure content and construct validity, the survey underwent a comprehensive review by experts in the field to make sure it measured what it was supposed to and how well the construct was assessed through each question. A perceived limitation of studies conducted by Hutchins et al. (2011) and O'Donoghue and Dean-Claytor (2008) was a lack of clarity in their procedures by which they ensured validity of their survey tools. The expert reviewers included Nancy Calamusa MA., CCC-SLP, Cecilia Manno MS., CCC-SLP, Nina Capone-Singleton, PhD, and Anthony Koutsoftas, PhD.

Nancy Calamusa has 25 years of experience as a pediatric feeding and swallowing specialist, establishing feeding and swallowing programs in hospital and private practice settings. She is also a consultant on feeding and swallowing in schools. Nancy is currently under review for her Board Certification in Swallowing Specialty (BCS-S). Cecilia Manno has spent her career serving children with dysphagia issues across various age groups and disorders and has served as a mentor to graduate students and practicing SLPs in this area. She has also coauthored on a book titled *Early oral-motor interventions for pediatric feeding problems: What, when and how*. Dr. Capone-Singleton's clinical experience includes evaluating and treating children between

birth and 8-years of age with extensive experience in pediatric dysphagia. She is a professor in the masters' speech-language pathology department at Seton Hall University and teaches courses on pediatric feeding and swallowing. She is also the Director of The Feeding Project, which currently collects data on the development of biting and chewing in typically developing children. She is an avid researcher and has many article and book publications. Dr. Koutsoftas, is a professor in the masters' speech-language pathology department at Seton Hall University and teaches research methods and language and literacy coursework. He has over 20 scholarly research publications.

To account for external threats to validity for the outcomes, a categorical analysis was conducted to identify if specific experiences disclosed by subjects in the demographic and professional experience section (i.e., years of experience in the field as an SLP, years of experience working with pediatric dysphagia, previous medical clinical experience with dysphagia, professional development experience in dysphagia, prior dysphagia coursework, quantity of feeding and swallowing students currently on caseload, work location, and administrative and environmental support) had an effect on subjects' opinions of their level of confidence when rating the various roles and responsibilities involved in the provision of feeding and swallowing services. To control for internal threats to validity that may occur due to the individual characteristics of the sample subjects, further biographical information was gathered on subjects' race, gender, ethnicity, and age. For the survey portion in which participants were presented with a list of feeding and swallowing (dysphagia) roles and responsibilities and were required to indicate which ones they participate in with a "yes" or "no" response, a specific description of each competency was provided to encourage both construct and content validity. This was designed to prevent inferences from being made which could potentially skew the

measurements and results. An additional threat to validity that was accounted for was the potential of subjects responding to questions based on what they perceived was an expected response. The assumption was that subjects answered honestly and accurately, that the survey questions were valid and reliable, and all subjects perceived questions in the same way. Another presumption was that the public-school SLPs studied were providing similar dysphagia management services. Therefore, surveying SLPs in public schools across the United States would provide a representative sample of dysphagia training needs.

### **Data Analysis**

The structural framework and stimulus items included in the survey instrument allowed for extensive analyses and inferences to be made, which extended well beyond the confines of data collection and interpretation in prior studies mentioned. Using a Likert Scale with a scale level of measurement allowed the researcher to use both parametric and nonparametric statistics. All categorical and numerical data were entered in the Statistical Package for Social Sciences (SPSS) 25.0 for comprehensive analysis. The unique information gathered through this exclusive study was interpreted in a multitude of ways to effectively answer the broader and subsidiary research questions (RQs) of this study.

For example, a robust descriptive inventory of the survey sample was obtained to gather data on the demographic makeup and professional experience of public-school SLPs across the United States, including those that did and did not provide dysphagia management. This research was also designed to allow for running descriptive statistics to make a comparison of the average level of confidence among all public-school SLPs studied for the 17 roles and responsibilities that fall within the scope of school-based dysphagia service provision. The outcomes provided general assumptions of public-school SLPs feeding and swallowing training needs through the

investigation of commonalities and patterns in their confidence levels for each of the feeding and swallowing (dysphagia) management roles and in general. Numerical ratings of confidence for each feeding and swallowing responsibilities (the dependent variable) were analyzed specifically by tabulating averages across subjects and then ranked in order the roles that participants collectively perceived being least to most confident.

Additionally, descriptive data were collected on trends in feeding and swallowing responsibilities for the four regions of the United States (Northwest, Midwest, South, and West). The data from this portion of the survey required participants to self-identify the dysphagia tasks they personally engaged in so that descriptive numerical data could be gathered on the percentage of the total sample that participated in each task by region. A Pearson's chi-squared test was then used to determine if there were significant differences in dysphagia tasks performed in public schools for the different regions. This statistical analysis highlighted more broadly the prevalence of dysphagia management in different parts of the country and more specifically the type of feeding and swallowing training public-school SLPs across the United States needed. An ANOVA was also run to investigate if there were notable differences in SLPs' opinions and perceptions of their confidence for the dysphagia roles and responsibilities based on the geographic region they worked in.

A two-independent samples *t* test was run to compare the overall reported assurance levels of the SLPs who engaged in feeding and swallowing service provision in public schools and those that did not. For public-school SLPs who provided dysphagia management, the degree of assurance for feeding and swallowing (dysphagia) tasks that the SLPs participated in were compared to ratings of confidence for those tasks they were not responsible for at their public

school. The demographic and professional experience characteristics of this group of participants and their dysphagia roles in the public school were also reviewed.

Several correlations were subsequently conducted to determine if any relationships existed between measurable ratings of confidence reported by participants and specific demographic and professional experience factors on the survey and if so the nature of those relationships. The study allowed for conclusions to be drawn from the total sample population about the influence of these independent variables on perceptions of confidence for the responsibilities involved in pediatric dysphagia management in public schools. For instance, it was determined if prior dysphagia training in a medical setting post-graduation had a greater positive influence on confidence levels compared to those with no prior experience in a medical environment, or if there were statistically significant differences in confidence and dysphagia training needs between those that had prior feeding and swallowing coursework at the master's level versus those that had not. Furthermore, possible relationships between years of clinical experience as an SLP and self-assurance with dysphagia management, as well as if having a higher number of students with dysphagia on an SLP's caseload resulted in higher confidence than those who had a lower number of these cases. Additionally, did having previous clinical experience in feeding and swallowing prior to working in a public school directly influence confidence levels and the type of instructional training needs. It was also examined if there was a correlation between how much administrative support an SLP received to perform these services and the degree of assurance they perceived themselves to possess. According to the findings from research by Hutchins et al. (2011), there existed a positive relationship between clinical exposure to dysphagia prior to working in a public school and perceptions of confidence.

### **Dissemination of Study Findings**

Results of this study will be dispersed through ASHA's speech-language pathology and audiology journals including *Dysphagia*, *Language Speech and Hearing Services on the Schools* (LSHSS), *American Journal of Speech-Language Pathology* (AJSLP), and *Journal of Speech, Language and Hearing Research* (JSLHR), as well as education and medical journals. It will also be broadcasted through workshops and poster sessions at the ASHA's and New Jersey Speech and Hearing Association's annual conventions and Allied Health conferences, as well as through webinars and in-service presentations conducted at local public-school districts throughout the United States.

## CHAPTER 4

### RESULTS

#### **Introduction**

Given that SLPs in public schools in the United States are responsible for providing feeding and swallowing (dysphagia) services that impact a child's social and academic development, as well as their health and safety, it is important to understand the type and extent of professional experience that public-school SLPs have in this area to support dysphagia needs. Also, it is essential to gather information on the dysphagia roles that public-school SLPs participate in and their perceived confidence levels for performing these feeding and swallowing tasks when working with children who experience such challenges. This allows for understanding where more training and support are warranted. Examining differences in overall assurance between public-school SLPs who do dysphagia and those who do not provides confirmation of whether dysphagia training is also warranted for the group that is not currently engaged in this service. Finally, by having knowledge of the general background and professional experience characteristics of public-school SLPs across the country, it can be determined which factors influence confidence levels to deliver dysphagia management.

#### **Review of the Research Questions**

The following overarching and subsidiary RQs were developed, and descriptive and inferential statistical analyses were performed on the data collected to explore these aspects.

#### **Overarching Research Questions**

- RQ 1. What is the current level of confidence of public-school SLPs in dysphagia management, given the shift of feeding and swallowing management into the educational setting?



RQ 2. What are the current dysphagia training needs of public-school SLPs, given the shift of feeding and swallowing management into the educational setting?

### **Subsidiary Research Questions**

- What are the roles and responsibilities of SLPs regarding feeding and swallowing (dysphagia) in public schools?
- Do roles and responsibilities in feeding and swallowing (dysphagia) management vary by school or location?
- Are there specific clinical competencies within the scope of school-based dysphagia management that SLPs report having less confidence with and for which they may need more training? (i.e., safety, team collaboration, diet selection, determining signs and symptoms of aspiration).
- Is there a relationship between demographic and professional experience characteristics (i.e., prior formal education, hands-on clinical experience working with dysphagia, age, gender, region, years of experience as a SLP) and levels of perceived confidence in the dysphagia clinical competency areas?
- What is the nature of the relationship, if any, between the demographic and professional experience characteristics of public-school SLPs (i.e., prior formal education, hands-on clinical experience working with dysphagia, age, gender, region, years of experience as a SLP) and levels of perceived confidence in the dysphagia clinical competency areas?
- Are there significant differences in confidence levels across the dysphagia clinical competencies between SLPs who practice dysphagia management in schools and those that do not?

Several strategies were used to organize the data for descriptive and inferential interpretation. A consistent process was used for coding the data. Names of states where the SLPs resided were all written out as the full word with an uppercase first letter. Individual responses that were deemed to be keyed in incorrectly by a participant were deleted, and the remainder of that participant's answers were retained for data analysis (Callegaro & DiSogra, 2008). Any questions that asked participants to round up to the nearest whole number were rounded up if a responder keyed in a number with a decimal (i.e., 2.5 or 3.5). For the number of professional development hours in dysphagia, some participants used the coding system of ASHA, which uses decimals (.5 = 5 hours). Any decimal entries were translated into hours to make responses cohesive for the participant pool. Also, if a participant responded with a number range for any question (i.e., 2–3), the lowest number in the range was used. For the number of dysphagia courses at the master's level, the response of "both" was counted as two courses and having dysphagia as part of a course was coded as one course. Any response where participants listed "N/A", "I don't know", "Not sure", or the response was unclear was removed from the final analysis. Allowing participants to write in a response for some questions resulted in some of these ambiguous responses. Participants were also coded as "0" if they did not participate in feeding and swallowing (dysphagia) in public schools and a "1" if they did practice dysphagia in the public school where they worked. This was done to determine the extent of the prevalence of feeding and swallowing services in public schools nationally and for comparisons in confidence ratings across the 17 feeding and swallowing responsibilities for both groups. Participants were also coded by the region of the United States they lived in to gather data on trends in roles and responsibilities for feeding and swallowing in public schools for different parts of the country.

They were coded as a “1” if they lived in the Northeast, “2” if they lived in the Midwest, “3” in the South, and “4” for the Western states.

### **Organization of the Chapter**

This chapter offers a comprehensive overview of the sample population from which the statistical outcome data were drawn. A specific breakdown of the demographic background of subjects is provided along with a detailed description of participants’ professional experience with feeding and swallowing. Participants’ levels of confidence are defined across the 17 dysphagia tasks and overall. Additionally, trends in feeding and swallowing roles across the regions of the United States is reported. A comparison of reported confidence ratings is outlined for the group that practices dysphagia versus the group that does not. Relationships between demographic and professional experience factors and ratings of perceived assurance with dysphagia management tasks are highlighted.

### **Response Rate and Demographics of Sample**

Following two rounds of recruitment, including posting the research survey on ASHA SIG forums 1, 13 and 16 and then individually emailing members in all three groups, there were 248 public-school SLPs who participated in the study. However, a total of 28 participants were excluded because they completed only the demographic and professional experience sections of the survey. This may have been due to technical failure or personal choice to discontinue (Callegaro & DiSogra, 2008). Therefore, 220 participants who had full data sets were used as the final data pool to be analyzed ( $N = 220$ ).

To gain an understanding of the demographic makeup of all respondents, data were collected on gender, age, race, ethnicity, place of residence, and the type of geographic location of each SLPs’ public-school. This information was later used to determine any relationships

between demographic elements and dysphagia roles respondents participated in as well as their confidence levels with those roles. The 220 study participants represented 42 out of the 50 states in the United States, with 24.5% ( $n = 54$ ) respondents from the Northeast, 25.5% ( $n = 56$ ) from the Midwest, 19.5% ( $n = 43$ ) from the South, and 30% ( $n = 66$ ) from the West (see Table 4.1). These statistics are generally proportionate, confirming that this study had a broad and robust sample across the nation for which results can easily be generalized to the total population of public-school SLPs in the United States. The greatest number of participants were from California ( $n = 28$ ), followed by Illinois ( $n = 18$ ), Texas ( $n = 17$ ), and New Jersey ( $n = 13$ ). One participant from Canada, New Brunswick (NB), also filled out the survey. This participant was included to gain some insight on feeding and swallowing responsibilities in public schools and confidence rating in this area outside of the United States. Geographically, three quarters of the SLPs surveyed worked in an urban public-school setting. This was represented by 76.4% ( $n = 168$ ), while 23.6% ( $n = 52$ ) practiced in a rural public-school (see Table 4.2).

Table 4.1

*Response Sample: State of Residence in the United States*

	<i>n</i>	%
Northeast	54	24.5
Midwest	56	25.5
South	43	19.5
West	66	30.0
Total	219	99.5

*Note.* One participant was from Canada, NB.

Table 4.2

*Response Sample: Geographic Location of Public Schools*

	<i>n</i>	%
Urban	168	76.4
Rural	52	23.6
Total	220	100.0

*Note.* Information on Regions of the United States was obtained from the U.S. Census Bureau Data (2015). Urban and Rural definitions were obtained from the U.S. Census Bureau Data (2017). Urban: Includes all territory, population, and housing units located in urban areas (UAs) and in places of 2,500 or more inhabitants outside of a UA; Rural: Includes all territory, persons, and housing units not defined as urban.

**Descriptive Statistics**

Out of the study sample, the participants were primarily female making up 98.6% of the sample population ( $n = 217$ ), and 1.4% were male ( $n = 3$ ). The age range of the respondents was wide, with a minimum age of 26, a maximum age of 75 and a mean age of 47 ( $SD = 12$ ; see Table 4.3).

Table 4.3

*Response Sample: Gender and Age*

	<i>n</i>	%			
Gender					
Male	3	1.4			
Female	217	98.6			
Total	220	100.0			
Age	<i>N</i>	%	<i>M</i>	<i>Mdn</i>	<i>SD</i>
	220	100.0	46.96	47.00	11.73

The ethnic background of participants was mainly “Not Hispanic or Latino”, which comprised 95.9% of the sample ( $n = 211$ ). The “Hispanic or Latino” population accounted for 4.1% ( $n = 9$ ) of all respondents. Most of the sample was “White”, comprising 95.5% ( $n = 210$ ). Of the remaining participants, 1.8 % ( $n = 4$ ) was “Black or African American”, .5 %, ( $n = 1$ ) was Asian, and 2.3% ( $n = 5$ ) indicated “Other” as their Ethnicity. This could be considered a limitation of the study in terms of diversity of the sample (see Table 4.4).

Table 4.4

*Response Sample: Race and Ethnicity*

	<i>n</i>	%
Race		
Not Hispanic or Latino	211	95.9
Hispanic or Latino	9	4.1
Total	220	100.0
Ethnicity		
White	210	95.5
Black or African American	4	1.8
Asian	1	0.5
Other	5	2.3
Total	220	100.0

*Note.* Information on Race and Ethnicity Categories was obtained from the U.S. Census Bureau (2010) data and the National Institutes of Health (2015).

Descriptive statistics on the professional experience of public-school SLPs were also collected. This included exposure to feeding and swallowing (dysphagia) in different practice settings including public schools, the extent of education in feeding and swallowing, credentials held, and length of practice in the field as a certified SLP. All SLP participants ( $N = 220$ ) indicated being certified by ASHA. The number of years of experience working with a Certificate of Clinical Competence from ASHA (ASHA CCC) ranged from one to 41 years, with a mean of 18 years ( $SD = 11$ ; see Table 4.5). Only 0.9% ( $n = 2$ ) indicated having board

certification as a dysphagia specialist, and 99.1% ( $n = 218$ ) did not possess this additional credential. Most participants were found to not have gone for this additional specialty training (see Table 4.6).

Table 4.5

*Response Sample: ASHA Certification and Years of Experience as ASHA CCC*

	<i>n</i>	%			
ASHA certification					
Yes	220	100.0			
No	0	0.0			
Total	220	100.0			
Years of experience as ASHA CCC	<i>N</i>	%	<i>M</i>	<i>Mdn</i>	<i>SD</i>
	220	100.0	17.80	18.00	11.73

Table 4.6

*Response Sample: Board Certification in Dysphagia*

	<i>n</i>	%
Dysphagia specialty credential		
Yes	2	0.9
No	218	99.1
Total	220	100.0

Of the respondent sample, 99.5 % ( $n = 219$ ) confirmed that they primarily worked in a public school. The one participant who indicated that this was not their chief place of employment was included regardless because they were still providing speech services in a public school. Time spent working in public schools ranged from 0 to 41 years for the participant pool ( $n = 219$ ), with a mean of 14 ( $SD = 9$ ). One study subject did not respond to this question (see Table 4.7).

Table 4.7

*Response Sample: Primary Work Setting*

	<i>n</i>	%
Public school		
Yes	219	99.5
No	1	0.5
Total	220	100.0

It was found that 39.5% ( $n = 87$ ) of the study sample practiced feeding and swallowing (dysphagia) in their public school, while 57.7% ( $n = 127$ ) did not provide this service. Of those that practiced dysphagia management, the average number of years of experience they had working with feeding and swallowing was three ( $SD = 6$ ). Participants were asked why feeding and swallowing was not being addressed in certain public schools in the United States. Two participants in this research indicated that the public-school administration viewed working on feeding and swallowing in the school to be a liability. The data from this study revealed that Iowa, Florida and Minnesota did not have an administrative school code for performing feeding in public schools. In Florida, it was noted that the role of feeding and swallowing was given to occupational therapists. There was a broad range in the number of feeding and swallowing cases participants reported, ranging from zero to 30 in total ( $M = 1.20$ ,  $SD = 3.06$ ). However, a mean of 1.20 cases indicated that, on average, public-school SLPs had a low number of dysphagia cases (see Table 4.8).

Data were also gathered from the 220 public-school SLPs on their experience with feeding and swallowing before working at a public school. The experience included the settings they received their training and for how many years they provided dysphagia management (see Table 4.9). The results yielded that 69.1% ( $n = 122$ ) of respondents had prior training, but 30.9 %



Table 4.8

*Response Sample: Dysphagia Management in Public Schools, Years of Experience and Number of Cases*

	<i>n</i>	%		
Provide feeding and swallowing services in PS				
Yes	87	39.5		
No	127	57.7		
Total	214	97.3		
	<i>N</i>	%	<i>M</i>	<i>SD</i>
Number of years of dysphagia experience in public schools	214	97.3	3.03	6.35
Number of feeding and swallowing cases				

( $n = 68$ ) had gone into public school with no feeding and swallowing exposure. Of the SLPs that were studied, the most common setting to gain experience was in the medical setting such as a hospital, rehab, or skilled nursing facility. For example, 71.4% ( $n = 157$ ) had prior medical dysphagia training while only 28.6% ( $n = 63$ ) did not. This was followed by 28.6% ( $n = 63$ ) of participants having done feeding and swallowing in early intervention and 16.8% ( $n = 37$ ) in a private practice setting. On average, the public-school SLPs who reported having prior dysphagia experience in a medical setting had 5 years exposure ( $M = 4.82$   $SD = 5.40$ ). Participants with previous exposure in early intervention noted a similar mean number of years ( $M = 4.75$ ,  $SD = 5.92$ ). In private practice, however, the average length of experience was found to be higher ( $M = 6.81$ ,  $SD = 7.57$ ). Although a private practice was the least common setting reported to gain feeding and swallowing experience, for those that did receive this training the average length of experience was longest when compared to the medical setting or early intervention. Participants also reported if they had had feeding and swallowing experience during their mentored Clinical

Fellowship (CF) before getting their certification from ASHA. Results indicated that a larger percentage did with 60% having experience ( $n = 132$ ) and 40% ( $n = 88$ ) did not (see Table 4.9).

Table 4.9

*Response Sample: Prior Dysphagia Training and Setting*

	<i>N</i>	<i>%</i>	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Training in Dysphagia					
Before public school	152	69.1			
Yes	68	30.9			
No	220	100.0			
Total	220	100.0			
Settings					
Medical	157	71.4	4.82	2.00	5.40
Early intervention	63	28.6	4.75	3.00	5.92
Private practice	37	16.8	6.81	5.00	7.57
Clinical Fellowship (CF)					
Experience					
Yes	132	60.0			
No	88	40.0			
Total	220	100.0			

Information was gathered on the extent of dysphagia education public-school SLPs had received in their graduate school program. Of those surveyed, 73.2 % ( $n = 161$ ) had one or more courses on feeding and swallowing, and 26.8% ( $n = 59$ ) had no master's level coursework on this topic. Most common was having taken one class, which comprised 40.6% of the sample ( $n = 107$ ), whereas, 20% ( $n = 44$ ) had two dysphagia classes, 1.4% ( $n = 3$ ) had three classes and .5% ( $n = 1$ ) had four classes. Any participant who listed a range (i.e., 1–2 classes), the lower of the two numbers was used for data analysis. Some SLPs had a combined pediatric and adult dysphagia class, and others had a separate class for each age group or class training focused on

only children or adults. Most received full courses on dysphagia although for a few content on feeding and swallowing was part of a neuro, aphasia, motor speech, or professional issues class. Only 110 out of 220 participants indicated having a pediatric dysphagia course in graduate school to prepare them for feeding and swallowing management in schools. Once practicing in the field of speech-language pathology, 71.8% ( $n = 158$ ) of public-school SLPs participated in professional development workshops to learn about feeding and swallowing (see Table 4.10).

Table 4.10

*Response Sample: Master's Level Dysphagia Courses*

	<i>n</i>	%			
Number of master's dysphagia classes					
Yes	161	73.2			
No	59	26.8			
Total	220	100.0			

  

	<i>N</i>	%	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Number of Master's Dysphagia Classes	155	70.5	1.34	1.00	0.55
1	107	48.6			
2	44	20.0			
3	3	1.4			
4	1	0.5			

When asked how many professional development courses in dysphagia they had received, the mean number reported was 15.97 ( $SD = 21.32$ ). However, it should be noted that some subjects listed the number of hours of professional development they had taken in feeding and swallowing as opposed to the number of actual courses. Additionally, 39 subjects' responses were not included because either their responses were vague, or they indicated being unsure of the total amount (see Table 4.11).

Table 4.11

*Response Sample: Professional Development in Dysphagia*

	<i>n</i>	%			
Number of master's dysphagia classes					
Yes	158	71.8			
No	62	28.2			
Total	220	100.0			
	<i>N</i>	%	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Number of courses	117	53.2	15.97	6.00	21.32

To gain perspective on the support public-school SLPs had available to engage in dysphagia management for children on their caseload, data were collected on (a) presence and type of feeding and swallowing materials and resources available in their school and district, and (b) the degree of support they had from their educational administrators to provide feeding and swallowing services. Examples were provided of what resource materials should include, such as reference books, parental instruction manuals, diet modification tools, and alternative feeding utensils. Outcomes of these survey questions revealed that almost three times the number of subjects did not have any feeding and swallowing resources in their school or district to perform this service compared to those who did. This accounted for 74.5 % ( $n = 164$ ) of the total sample. Only 25.5% ( $n = 56$ ) had some form of resource material to use (see Table 4.12). Simple qualitative coding in excel was used to capture trends in responses to the type of feeding and swallowing resources available in public schools. These included adaptive feeding utensils and seating arrangements, resource books, manuals, videos and informational packets for professionals and parents about dysphagia, district guidelines on dysphagia management and/or feeding plans with accommodations, training and mentoring on feeding and swallowing, feeding

teams or district dysphagia specialists available, and consultation opportunities with occupational therapists, nurses or dietitians.

Table 4.12

*Response Sample: Dysphagia Resources at Public Schools*

	<i>n</i>	%
Yes	56	25.5
No	164	74.5
Total	220	100.0

It is important for public school speech-language SLPs to have support from their school administrators to provide this service when children on their caseload presented with feeding and swallowing issues that affected their health, safety, development, and learning (Lefton-Grief & Arvedson, 2008). Understanding trends in the degree of support public-school SLPs nationwide receive is necessary to identify if further education is warranted for educational leaders on this topic. Based on a 5- point Likert scale ranging from 1 (*the least amount of administrator support*) to 5 (*the most amount of support*), the mean level of perceived support for feeding and swallowing for SLPs studied was 1.91 ( $SD = 1.30$ ). The largest number of participants indicated they received the least amount of administrative support at 59.5% ( $n = 131$ ). A rating of “2” was reported by 10.5% ( $n = 23$ ) of the sample, a “3” by 15.5% ( $n = 34$ ), a “4” by 8.2% ( $n = 18$ ), and a “5” by 6.4% ( $n = 14$ ). This is significant, as it indicates a perceived lack of support essential to provide dysphagia management (see Table 4.13).

When the SLPs in this study were asked about the type of administrative support for dysphagia management that they received in their public school, 147 out of 220 participants (67%) indicated not having any support from their district administrators. Reasons for this included concerns over potential liability, misconceptions that this was a medical service and

Table 4.13

*Response Sample: Level of Administrative Support for Dysphagia Management in Public Schools*

	<i>N</i>	5	4	3	2	1	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Rating of perceived support	220	6.4	8.2	15.5	10.5	59.5	1.91	1.00	1.30

disorder versus an educational issue to be addressed in school, difficulties justifying the need to administrators, and occupational therapists being given this responsibility. Of the SLPs who received support for dysphagia management from their school leaders, the types of supports that were commonly reported included funding to purchase feeding utensils and equipment, such as adaptive spoons, cups, bowls and special feeding chairs; opportunities to participate in community continuing education workshops on feeding and swallowing; and in-district trainings by feeding specialists or professional learning groups on the topic of dysphagia. Some participants also documented support for the development of feeding plans and protocols, including policies and procedures for school staff and parents on proper feeding techniques and eating restrictions, aspiration precautions, and consultation with the school nurse to maintain safety during eating. It was also reported that opportunities to collaborate with the school nurse allowed the SLP to identify any medical or health needs that would need to be considered when managing dysphagia and get assistance with meal prep and diet modifications. There were several instances where public-school SLPs indicated having a feeding and swallowing team on site to handle any dysphagia issues or a feeding consultant to reach out to when children needed dysphagia management services. General administrative support for the dysphagia services SLPs provided was also evident.

Opinions about what dysphagia supports public-school SLPs were not receiving was also asked for in order to understand where gaps may have existed in districts to provide feeding and swallowing services and if school leaders needed further education on the importance of addressing the dysphagia needs of students in schools. Study participants described that they lacked feeding materials or the budget to purchase them, administrator advocacy for provision of feeding and swallowing services in the school due to reasons such as liability, limited knowledge about this service, or beliefs that it was a medical issue and a school was an educational model. It was also reported that school leaders did not support engaging in feeding and swallowing interventions due to a false impression that this area was not within the scope of practice of an SLP in a public-school, and it should be the role of the nurses in the district. There were also perceptions that educational administrators did not understand that dysphagia management services needed to be included into a child's Individualized Education Plan (IEP) or that this was not allowed to be added to this document. In some cases, public-school SLPs were told not to address feeding and swallowing at their school, but they were not given an explanation as to why this should not be managed there. These concerns aligned with ratings provided by the study subjects on the level of perceived administrative support for feeding and swallowing.

There were other perceived barriers to gaining support from school leadership to provide dysphagia services. They consisted of no time to train nurses, parents, teachers, and paraprofessionals working with students when the school SLP was not present or available, and limited time to educate school staff about dysphagia on an ongoing basis. Along the same lines, there were reports of having no guidance from someone trained in feeding and swallowing to support dysphagia management. Other areas of concern included not having a budget for training or support for continuing education and professional development in this domain and not having

clear feeding guidelines in the district (or not having any at all) on best practice protocol and ethical considerations. Finally, given high caseloads, the time to focus on dysphagia management was not always available. In many cases, participants just listed “none” for having no supports at all.

### **Speech-Language Pathologists’ Responsibilities in Public-School Dysphagia Management**

This research study was designed to investigate trends in feeding and swallowing roles for public-school SLPs nationwide who engaged in dysphagia management. The data collected on the feeding and swallowing responsibilities that SLPs engaged in offered insight into the type of dysphagia skills and experiences SLPs needed to possess to provide dysphagia management in a public school. Examples and definitions for some of the 17 dysphagia clinical competencies were provided to avoid misinterpretations of what these tasks involved. Recognizing signs and symptoms of choking was found to be the most common task that SLPs were responsible for. This was reported by 57.3% of the subjects ( $\underline{n} = 126$ ). The second most common was interpreting case history information, which 50.9% of the sample engaged in ( $\underline{n} = 112$ ), followed by 45.9 % of public-school SLPs who needed to recognize signs and symptoms of aspiration ( $\underline{n} = 101$ ). The least frequently engaged in role among the SLPs was diagnosing a feeding or swallowing (dysphagia) disorder. Only 9.5% ( $\underline{n} = 21$ ) indicated having to do this as a part of dysphagia management in their school. Fostering nutritional status (i.e., determining healthy foods and amount of intake to promote health, brain development and concentration needed for classroom learning), performing a feeding and swallowing evaluation, and providing feeding and swallowing (dysphagia) treatment services were also noted as tasks not commonly participated in. Responsibility for these three tasks was reported by 13.6 % ( $n = 30$ ), 17.3% ( $n = 38$ ), and



19.1% ( $n = 42$ ) of the subjects respectively. Percentages for the remaining eleven dysphagia roles can be found in Table 4.14.

Table 4.14

*Percentage of Public-School SLPs Who Engage in Each of the 17 Feeding and Swallowing Responsibilities in School Dysphagia Management*

	<i>n</i>	%
Recognizing signs and symptoms of choking	126	57.3
Interpreting case history information (i.e., medical history) to determine impact on feeding and swallowing	112	50.9
Recognizing signs and symptoms of aspiration (when food or liquid enters the lungs)	101	45.9
Engaging in feeding and swallowing (dysphagia) team collaboration with school nurses and school staff (i.e., teachers, classroom aides, physical therapists, occupational therapists)	97	44.1
Determining if it is educationally relevant to provide feeding and swallowing (dysphagia) services (i.e., needed to maintain safe eating and swallowing during the school day, promote timely and safe participation in social mealtime experiences)	84	38.2
Assessment of oral-motor function for eating	82	37.3
Making referrals for a medically-based swallowing (dysphagia) evaluation	76	34.5
Assisting the student with safe eating and swallowing (i.e., size of bolus, pacing, clearing the oral cavity, monitoring for choking and aspiration)	75	34.1
Training caregivers and/or school staff members on managing feeding and swallowing	72	32.7
Engaging in feeding and swallowing (dysphagia) team collaboration with medical professionals	58	26.4
Identifying a normal versus abnormal swallow	55	25.0
Providing recommendations for an appropriate diet or modifying a diet (i.e., selecting food textures and types based on eating and swallowing ability)	53	24.1
Interpreting Modified Barium Swallow Studies (MBSS) and/or feeding and swallowing (dysphagia) reports from other professionals	46	20.9
Providing feeding and swallowing (dysphagia) treatment services	42	19.1
Performing a feeding and swallowing evaluation	38	17.3
Fostering nutritional status (i.e., determining healthy foods and amount of intake to promote health, brain development and concentration needed for classroom learning)	30	13.6
Diagnosis of a feeding or swallowing (dysphagia) disorder	21	9.5

*Note.* All 220 participants completed this section of the survey ( $N = 220$ ). The 17 dysphagia tasks are reported in the table from most to least commonly engaged in.

## Public-School Speech-Language Pathologists' Confidence Ratings

Perceived levels of confidence to perform each of the 17 feeding and swallowing responsibilities were measured for the total sample to determine where additional training and support by educational administrators could be beneficial. Participants rated their confidence on a 5-point Likert scale ranging from 1 (*least confident*) to 5 (*most confident*). Definitions of “least” versus “most” confident were provided to help guide them in their ratings and control for inconsistencies in interpretation. Mean confidence levels for each 17 dysphagia tasks ranged from 2.42 to 3.82. Specifically, the lowest mean confidence levels were reported for the tasks of fostering nutritional status (i.e., determining healthy foods and amount of intake to promote health, brain development, and concentration needed for classroom learning;  $M = 2.42$ ,  $SD = 1.31$ ), performing a feeding and swallowing evaluation ( $M = 2.53$ ,  $SD = 1.42$ ), diagnosing a feeding or swallowing (dysphagia) disorder ( $M = 2.55$ ,  $SD = 1.44$ ), and interpreting MBSS and/or feeding and swallowing (dysphagia) reports from other professionals ( $M = 2.56$ ,  $SD = 1.42$ ). The highest mean confidence ratings were indicated for the tasks of recognizing signs and symptoms of choking ( $M = 3.82$ ,  $SD = 1.26$ ), recognizing signs and symptoms of aspiration (when food or liquid enters the lungs;  $M = 3.36$ ,  $SD = 1.33$ ), assessing oral-motor function for eating ( $M = 3.22$ ,  $SD = 1.35$ ), and interpreting case history information (i.e., medical history) to determine impact on feeding and swallowing ( $M = 3.16$ ,  $SD = 1.36$ ). Mean confidence levels were lower for tasks that participants reported to have the least amount of exposure to (i.e., fostering nutritional status, performing a feeding and swallowing evaluation, and diagnosing a feeding or swallowing disorder), and some of the highest ratings were for dysphagia tasks most frequently performed (i.e., interpreting case history information and recognizing signs and symptoms of aspiration; see Table 4.15).

Table 4.15

*Response Sample: Ratings of Perceived Confidence of the Total Sample for the 17 Feeding and Swallowing Responsibilities in School Dysphagia Management*

	<i>N</i>	5	4	3	2	1	<i>M</i>	<i>Mdn</i>	<i>SD</i>
Recognizing signs and symptoms of choking	220	38.6	30.0	14.5	8.6	8.2	3.82	4.00	1.26
Recognizing signs and symptoms of aspiration (when food or liquid enters the lungs)	220	24.1	27.3	21.4	15.0	12.3	3.36	4.00	1.33
Assessment of oral-motor function for eating	220	22.7	22.3	23.2	18.2	13.6	3.22	3.00	1.35
Interpreting case history information (i.e., medical history) to determine impact on feeding and swallowing	220	19.5	25.9	23.2	14.1	17.3	3.16	3.00	1.36
Making referrals for a medically based swallowing (dysphagia) evaluation	220	26.8	15.5	20.5	20.0	17.3	3.15	3.00	1.45
Assisting the student with safe eating and swallowing (i.e., size of bolus, pacing, clearing the oral cavity, monitoring for choking and aspiration)	220	23.2	23.2	19.1	14.5	20.0	3.15	3.00	1.45
Engaging in feeding and swallowing (dysphagia) team collaboration with school nurses and school staff (i.e., teachers, classroom aides, physical therapists, occupational therapists)	220	23.2	19.5	20.5	20.0	16.8	3.12	3.00	1.41
Identifying a normal versus abnormal swallow	220	14.1	27.3	17.7	20.9	20.0	2.95	3.00	1.36
Determining if it is educationally relevant to provide feeding and swallowing (dysphagia) services (i.e., needed to maintain safe eating and swallowing during the school day, promote timely and safe participation in social mealtime experiences)	220	18.6	20.5	17.3	21.8	21.8	2.92	3.00	1.43
Engaging in feeding and swallowing (dysphagia) team	220	20.5	15.9	20.0	19.5	24.1	2.89	3.00	1.46

	<i>N</i>	5	4	3	2	1	<i>M</i>	<i>Mdn</i>	<i>SD</i>
collaboration with medical professionals									
Training caregivers and/or school staff members on managing feeding and swallowing	220	15.9	24.5	12.3	19.1	28.2	2.81	3.00	1.47
Providing recommendations for an appropriate diet or modifying a diet (i.e., selecting food textures and types based on eating and swallowing ability)	220	13.2	23.2	16.4	19.1	28.2	2.74	3.00	1.42
Providing feeding and swallowing (dysphagia) treatment services	220	14.5	16.8	19.1	19.1	30.5	2.66	3.00	1.43
Interpreting Modified Barium Swallow Studies (MBSS) and/or feeding and swallowing (dysphagia) reports from other professionals	220	12.3	16.4	20.9	15.9	34.5	2.56	2.00	1.42
Diagnosis of a feeding or swallowing (dysphagia) disorder	220	14.1	14.1	18.2	19.5	34.1	2.55	2.00	1.44
Performing a feeding and swallowing evaluation	220	11.4	19.1	15.0	20.5	34.1	2.53	2.00	1.42
Fostering nutritional status (i.e., determining healthy foods and amount of intake to promote health, brain development, and concentration needed for classroom learning)	220	9.1	13.6	20.5	24.1	32.7	2.42	2.00	1.31

*Note.* All 220 participants completed this section of the survey (N=220). The 17 dysphagia tasks are reported in the table based on average ratings of perceived confidence from most to least confident.

A Pearson's chi-squared test was run to determine if there was a significant difference in ratings of confidence for each of the 17 feeding and swallowing responsibilities between the group of public-school SLPs that worked with dysphagia in their school and that which did not. All Pearson's chi-squared tests were indeed significant at a .000 level of significance ( $p = .000$ ,  $df = 4$ ) except for fostering nutritional status, the task SLPs had least exposure to ( $p = .017$ ,  $df = 4$ ). It made sense that ratings would be similar between the two groups for fostering nutritional status since one group didn't do it and one group rarely did it. A significance level of .000 for all other dysphagia responsibilities confirmed that there was a significant difference in ratings of confidence between the group of public-school SLPs who performed dysphagia in school and that which did not. When ratings of confidence for the 17 feeding and swallowing responsibilities were averaged, a significant difference was found between the two groups ( $p = .004$ ,  $df = 63$ ).

In most cases, SLPs who provided dysphagia services in a public school reported more 4s and 5s than the group which did not. In fact, ratings of 4s and 5s (higher levels of confidence) in many instances were more than double for the group who engaged in feeding and swallowing management in schools. The only two feeding and swallowing tasks where the opposite was found were recognizing signs and symptoms of choking and recognizing signs and symptoms of aspiration. There was a greater number of subjects who did not perform dysphagia management in public schools that rated themselves as a 4, compared to the group that did. When comparing the two groups, it was found that three to five times the number of SLPs who did not engage in dysphagia in public-schools, rated their confidence level as a "1" or "2" (least confident) for all 17 dysphagia tasks than the group who practiced public school feeding and swallowing management. These outcomes demonstrated that the group who performed feeding and

swallowing in schools felt more confident in performing each of the dysphagia responsibilities than the group who did not. There was evidence of this when average levels of confidence for the 17 dysphagia tasks combined was compared between participants in each of the two groups (see Table 4.16).

A Pearson's chi-squared test was subsequently conducted to determine if there was a significant difference in dysphagia responsibilities for the four regions of the United States (Northeast, Midwest, South, and Northwest). The outcomes revealed that there was not a statistically significant difference ( $p < .05$ ) in feeding and swallowing tasks being done around the United States. In fact,  $p$  values for 16 out of the 17 dysphagia responsibilities were greater than .05. The exception was the Interpreting a Modified Barium Swallow Study (MBSS) and/or feeding and swallowing (Dysphagia) reports from other professionals. The difference across regions in performing this task was considered significant with a  $p$  value of .043 ( $df = 3$ ). According to the responses of participants in this study, in the South and Northwest public-school SLPs interpreted a Modified Barium Swallow Study (MBSS) and/or feeding and swallowing (Dysphagia) reports from other professionals twice as much as in the Northeast and Midwest. This descriptive analysis revealed that each of the 17 feeding and swallowing responsibilities were being engaged in across all four regions of the nation. Table 4.17 lists each of the 17 dysphagia tasks in order from most to least participated in across the Northeast, Midwest, South and Northwest. Investigating commonalities and patterns in roles and responsibilities across the nation provided general assumptions of public-school SLPs feeding and swallowing training needs. This study's outcomes also left questions for future research: Do people do things because they are confident? Do SLPs not participate because they are not confident? Would SLPs be more confident if they had more training and in what?

Table 4.16

*Perceived Ratings of Confidence for the 17 Feeding and Swallowing Responsibilities: Comparing Number of SLPs Who Work With Feeding and Swallowing in Public Schools and Those Who Do Not*

	Work with dysphagia in public school	<i>(Least confident)</i>			<i>(Most confident)</i>		<i>p</i>	<i>df</i>
		Scale point 1	Scale point 2	Scale point 3	Scale point 4	Scale point 5		
Assessment of oral-motor function for eating	No	27	31	35	17	17	.000	4
	Yes	3	9	15	29	31		
Performing a feeding and swallowing evaluation	No	57	33	13	17	7	.000	4
	Yes	17	11	17	25	17		
Identifying a normal versus abnormal swallow	No	38	31	21	26	11	.000	4
	Yes	6	14	16	31	20		
Recognizing signs and symptoms of choking	No	17	16	21	38	35	.000	4
	Yes	4	11	14	28	30		
Recognizing signs and symptoms of aspiration (when food or liquid enters the lungs)	No	23	22	33	30	19	.000	4
	Yes	4	11	14	28	30		
Diagnosis of a feeding or swallowing (dysphagia) disorder	No	58	31	18	9	11	.000	4
	Yes	17	9	20	22	19		
Providing recommendations for an appropriate diet or modifying a diet (i.e., selecting food textures and types based on eating and swallowing ability)	No	55	29	17	16	10	.000	4
	Yes	7	12	18	31	19		
Fostering nutritional status (i.e., determining healthy foods and amount of intake to promote health, brain development and concentration needed for classroom learning)	No	54	28	23	13	9	.017	4
	Yes	18	23	20	16	10		
Assisting the student with safe eating and swallowing (i.e., size of bolus, pacing, clearing the oral cavity, monitoring for	No	38	24	26	23	16	.000	4
	Yes	6	7	14	27	33		

	Work with dysphagia in public school	<i>(Least confident)</i>		<i>(Most confident)</i>			<i>p</i>	<i>df</i>
		Scale point 1	Scale point 2	Scale point 3	Scale point 4	Scale point 5		
choking and aspiration)								
Determining if it is educationally relevant to provide feeding and swallowing (dysphagia) services (i.e., needed to maintain safe eating and swallowing during the school day, promote timely and safe participation in social mealtime experiences)	No	39	39	19	18	12	.000	4
	Yes	9	8	17	25	28		
Providing feeding and swallowing (dysphagia) treatment services	No	59	29	19	10	10	.000	4
	Yes	8	11	22	25	21		
Engaging in feeding and swallowing (dysphagia) team collaboration with school nurses and school staff (i.e., teachers, classroom aides, physical therapists, occupational therapists)	No	32	36	28	17	14	.000	4
	Yes	5	7	17	23	35		
Engaging in feeding and swallowing (dysphagia) team collaboration with medical professionals	No	42	34	25	12	14	.000	4
	Yes	11	7	18	22	25		
Interpreting Modified Barium Swallow Studies (MBSS) and/or feeding and swallowing (dysphagia) reports from other professionals	No	57	24	25	14	7	.000	4
	Yes	18	9	20	21	19		
Interpreting case history information (i.e., medical history) to determine impact on feeding and swallowing	No	32	23	35	22	15	.000	4
	Yes	6	7	15	32	27		
Training caregivers and/or school staff members on managing feeding and swallowing	No	53	31	16	18	9	.000	4
	Yes	9	10	19	34	24		
Making referrals for a medically based swallowing (dysphagia) evaluation	No	30	33	30	12	22	.000	4
	Yes	7	10	15	21	34		

*Note.*  $N = 214$ . Based on a Pearson's chi-squared test ( $p < .05$ )



Table 4.17

*Trends in Feeding and Swallowing Responsibilities in Public Schools Across the Four Regions of the United States*

	<i>p</i>	<i>df</i>
Engaging in feeding and swallowing (dysphagia) team collaboration with school nurses and school staff (i.e., teachers, classroom aides, physical therapists, occupational therapists)	.997	3
Performing a feeding and swallowing evaluation	.932	3
Recognizing signs and symptoms of choking	.785	3
Assisting the student with safe eating and swallowing (i.e., size of bolus, pacing, clearing the oral cavity, monitoring for choking and aspiration)	.779	3
Determining if it is educationally relevant to provide feeding and swallowing (dysphagia) services (i.e., needed to maintain safe eating and swallowing during the school day, promote timely and safe participation in social mealtime experiences)	.767	3
Identifying a normal versus abnormal swallow	.682	3
Assessment of oral-motor function for eating	.677	3
Providing recommendations for an appropriate diet or modifying a diet (i.e., selecting food textures and types based on eating and swallowing ability)	.660	3
Providing feeding and swallowing (dysphagia) treatment services	.560	3
Training caregivers and/or school staff members on managing feeding and swallowing	.509	3
Interpreting case history information (i.e., medical history) to determine impact on feeding and swallowing	.482	3
Diagnosis of a feeding or swallowing (dysphagia) disorder	.469	3
Recognizing signs and symptoms of aspiration (when food or liquid enters the lungs)	.338	3
Fostering nutritional status (i.e., determining healthy foods and amount of intake to promote health, brain development and concentration needed for classroom learning)	.214	3
Making referrals for a medically based swallowing (dysphagia) evaluation	.111	3
Engaging in feeding and swallowing (dysphagia) team collaboration with medical professionals	.086	3
Interpreting Modified Barium Swallow Studies (MBSS) and/or feeding and swallowing (dysphagia) reports from other professionals	.043	3

*Note.*  $N = 219$ . Based on a Pearson's chi-squared test ( $p < .05$ ). Four regions of the United States: the Northeast, Midwest, South, and Northwest. Information on regions of the United States was obtained from the U.S. Census Bureau (2015) data.

A crosstab analysis was also run to determine whether the four regions of the United States differed significantly in the percentage of SLPs who did not provide dysphagia management in their public school. A Pearson's chi-squared test revealed that the difference between the Northeast, Midwest, South and Northwest was not statistically significant ( $p = .08$ ,  $df = 3$ ). Although the largest percentage of study participants that performed dysphagia in public schools was found to be in the South (57.1%), and the least amount of participation was deemed to be in the Midwest (33.3%), trends did not support any major variations. However, the difference in the percentage of public-school SLPs responsible for the feeding and swallowing needs of students on their caseload across geographic locations was significant with a  $p$  value of .004 ( $df = 1$ ). A total of 52.9% ( $n = 27$ ) of subjects who worked in rural settings provided dysphagia services compared to 36.8% ( $n = 60$ ) of those in urban neighborhoods (see Table 4.18).

Table 4.18

*Percentage of Participants Who Work With Dysphagia in Public Schools: The Regions of the United States Where Participants Live and the Geographic Location of Their School*

	Northeast		Midwest		South		West		Total
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	
Yes	21	41.2	18	33.3	24	57.1	23	34.8	86
No	30	58.8	36	66.7	18	42.9	43	65.2	127
Total	51		54		42		66		213

  

	Urban		Rural		Total
	<i>N</i>	%	<i>N</i>	%	
Yes	60	36.8	27	52.9	87
No	103	63.2	24	47.1	127
Total	163		51		214

*Note.* Based on a Pearson's chi-square test ( $p < .05$ ). Information on geographic locations of the United States was obtained from the U.S. Census Bureau (2010) data.

## Inferential Statistics

A  $t$  test of two independent samples was run to determine if there was a statistically significant difference in the mean confidence levels of those that performed dysphagia in public schools and those that did not for the 17 feeding and swallowing tasks. For the group that performed dysphagia, the mean overall confidence level for the 17 feeding and swallowing tasks combined was 3.57 ( $SD = 1.03$ ), and for the group that did not practice dysphagia the average overall confidence was 2.48 ( $SD = 1.12$ ). This indicated that the mean overall confidence was higher for the group that performed dysphagia. The assumption of homogeneity of variance was met since the Levene's test was not statistically significant ( $F = .953, p = .330$ ). The mean difference between the two groups was -1.098, with sufficient evidence to propose that the mean overall score between the two groups was statistically significantly different ( $t = -7.266, \text{Sig.} = .000, df = 212$ ). There was a 95% confidence that the mean difference for the two independent samples fell between -.799 and -1.395. Therefore, the null hypothesis, that the mean overall confidence would be equal for the two groups at the .05 level of significance, was rejected (see Table 4.19).

Table 4.19

*Two Independent Samples t Test: Comparing the Average Overall Confidence Level for the 17 Dysphagia Tasks Combined for Those Who Practice Dysphagia and Those Who Do Not*

Levene's test		$t$ test					95% $CI$ for mean difference	
$F$	Sig.	$t$	Sig.	$df$	Mean difference	$SE$	Lower	Upper
.953	.330	-7.266	.000	212	-1.098	.15099	-1.395	-.799

A one-way analysis of variance (ANOVA) was conducted to determine if there was a statistically significant mean difference in average levels of confidence by region for the total

sample. The analysis was found to be statistically significant,  $F(3, 215) = 5.940, p = .001$ . The effect size was  $\eta^2 = .08$ , which indicated that where an SLP lived played a medium role in levels of confidence in performing the 17 dysphagia tasks in the United States. This means that 80% of the change in confidence level could be attributed to a public-school SLP place of residence. Since the homogeneity of variance assumption was not met ( $F = 2.429$ ), the Games-Howell post hoc comparisons were used to determine whether there was a significant difference between regions. The mean confidence score for SLPs in the Northeast was significantly different ( $M = 2.66, SD = 1.04$ ) from those in the South ( $M = 3.48, SD = 1.36$ ). The average assurance score for SLPs in the Midwest ( $M = 2.61, SD = 1.11$ ) was significantly different from the South ( $M = 3.48, SD = 1.36$ ). The mean difference between the Northeast and South was .823 with a level of significance of .008 and for the Midwest and South the mean difference was -.869 at a  $p$ -level of .006 (Table 4.20).

A correlational analysis was conducted to determine the degree to which specific demographic and professional experience factors were associated with perceived confidence for the 17 dysphagia responsibilities studied (see Table 4.21). For the demographic of age, the Pearson's  $r$  correlation coefficient of  $-.024$  indicated a weak, negative relationship between the age of a public-school SLP and confidence in performing the 17 dysphagia roles. This negative ( $r$ ) value indicated that individuals who were older tended to have lower levels of confidence. The correlation between age and confidence was considered to not be statistically significant, given the  $p$  value (significance) of .726. Additionally, the coefficient of determination ( $r^2$ ) was 0.0006, which indicated that 0% of the variance in total confidence was accounted for by an individual's age.

Table 4.20

*Mean Differences in SLPs' Perceived Confidence for the 17 Dysphagia Tasks: Regional Trends*

					95% <i>CI</i> for mean			
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>SE</i>	Lower bound	Upper bound	Minimum	Maximum
Descriptives: Avg17response								
Northeast	54	2.66	1.04	.141	2.377	2.943	1.00	4.76
Midwest	56	2.61	1.11	.149	2.316	2.911	1.00	5.00
South	43	3.48	1.36	.208	3.064	3.902	1.00	5.00
Northwest	66	3.09	1.18	.145	2.797	3.376	1.00	4.94
Total	219	2.94	1.21	.082	2.778	3.099	1.00	5.00
Multiple Comparisons: Dependent Variable Avg_17response								
			Mean difference	95% <i>CI</i>				
	(I) Region	(J) Region	(I-J)	<i>SE</i>	Sig.	Lower bound	Upper bound	
Games-Howell	Northeast	Midwest	.047	.205	.996	-0.488	0.582	
		South	-.823	.251	.008	-1.482	-0.163	
		Northwest	-.426	.202	.157	-0.953	0.101	
	Midwest	Northeast	-.047	.205	.996	-0.582	0.488	
		South	-.869	.255	.006	-1.540	-0.199	
		Northwest	-.473	.208	.109	-1.014	0.068	
	South	Northeast	.823	.251	.008	0.163	1.482	
		Midwest	.869	.255	.006	0.199	1.540	
		Northwest	.396	.253	.404	-0.268	1.061	
	Northwest	Northeast	.426	.202	.157	-0.101	0.953	
		Midwest	.473	.208	.109	-0.068	1.014	
		South	-.396	.253	.404	-1.061	0.268	

*Note.* The mean difference is significant at the .05 level.

However, in examining years of experience, statistically significant relationships existed. For years of experience working in a public school, the Pearson's *r* correlation coefficient of -.224 indicated a weak, negative relationship between the longevity in a public school of an SLP and the level of confidence they felt they had in performing the 17 dysphagia tasks. This negative (*r*) value indicated that the less years of experience an SLP had in a public school the more likely they were to have greater levels of confidence. The correlation between years of experience in a public school and confidence was statistically significant ( $p = .001$ ).

Additionally, the coefficient of determination ( $r^2$ ) was .05, which indicated that 5% of the variance in confidence was accounted for by an individual's years of experience in a public school.

In examining years of experience working with dysphagia specifically in a public school, a Pearson's  $r$  correlation coefficient of .387 indicated a low, positive correlation with perceived confidence. This positive ( $r$ ) value suggested that the more years of experience an SLP had with feeding and swallowing in a public school the greater their levels of perceived assurance. The relationship between years of experience with dysphagia in a public school and confidence was statistically significant ( $p = .000$ ). The coefficient of determination ( $r^2$ ) was .15, which indicated that 15% of the variance in overall confidence was accounted for by an individual's years of experience with feeding and swallowing in a public school. A low, positive correlation was also found between the number of dysphagia cases a SLP had in a public school and their degree of confidence with the dysphagia tasks being measured. A positive Pearson's  $r$  of .230 indicated that the more feeding and swallowing cases a public-school SLP had, the more likely they would be to report higher levels of confidence in performing the various dysphagia management functions. The relationship was significant as the  $p$  value was .001. The coefficient of determination ( $r^2$ ) was .05, so 5% of the variance in average confidence was explained by the amount of feeding and swallowing cases the SLP had in a public school.

The relationship between confidence levels and experience working with dysphagia prior to coming to a public school was also examined. Given that in this study "yes" responses were coded as "1" and "no" responses were coded as "0", a negative Pearson's  $r$  of -.517 was interpreted as a moderate, positive correlation between having prior feeding and swallowing exposure and participants' perspective of their confidence with the 17 dysphagia tasks. Those

SLPs who had more experience with dysphagia before working at a public school were more likely to rate themselves with higher levels of confidence. The correlation between prior feeding and swallowing experience was considered statistically significant, given the  $p$  value of .000. The coefficient of determination ( $r^2$ ) was .27, which suggested that 27% of the variance in confidence was accounted for by an individual's length of experience working with dysphagia prior to working in a public school. Statistical analyses were then conducted to determine if there was an association between the setting in which a public-school SLP had previous dysphagia experience and their perceived confidence. Participants were asked about their prior feeding and swallowing experience in a medical, private practice and early intervention setting. Because these were yes or no response questions, any negative Pearson's  $r$  correlation coefficients were considered as positive relationships.

Having prior feeding and swallowing experience in a medical setting produced a Pearson's  $r$  of -.494 which indicated a moderate, positive association between having had dysphagia experience in a hospital or rehabilitation environment and ratings of assurance with the 17 dysphagia responsibilities. Therefore, public- school SLPs with previous medical feeding and swallowing experience tended to have higher levels of perceived confidence. This relationship was statistically significant with a  $p$  value of .000. An  $r^2$  value of .24, suggested that 24% of the variance in confidence was attributed to the prior exposure of an SLP to feeding and swallowing in medical settings. Similarly, positive correlations were found between having previous experience with feeding and swallowing in the private practice and early intervention sectors. There was a low, positive relationship between experience in an early intervention setting and confidence levels with a Pearson's  $r$  of -.331. Individuals having prior experience with dysphagia in early intervention tended to have greater assurance in managing the different

dysphagia tasks. The correlation was statistically significant for this setting as well, with a Sig.  $p$  value of .000. The coefficient of determination was .11, suggesting that 11% of the variance in confidence ratings was attributed to whether an SLP had prior early intervention dysphagia training. Public-school SLPs who worked with feeding and swallowing at a private practice before coming to a public school also tended to perceive themselves as being more confident with the 17 dysphagia areas, as indicated by a Pearson's  $r$  of -.302. The relationship between the two was statistically significant with a  $p$  value of .000. An  $R^2$  value of .09 revealed that 9% of the variance in perceptions of confidence was related to private practice experience with feeding and swallowing.

A correlation was run to determine if there was relationship between years of experience with dysphagia in the medical, private practice and the early intervention environment and confidence with the tasks involved in feeding and swallowing provision. A Pearson's  $r$  of .520 suggested a moderate, positive correlation between length of participation in dysphagia in the medical environment and reported ratings of confidence. Conversely a low, positive relationship existed between longevity of feeding and swallowing practice in early intervention and private practice and assurance rates, with a Pearson's  $r$  of .393 and .276 respectively. Therefore, the longer a public-school SLP had prior dysphagia experience in these environments the more likely they reported higher confidence ratings. The relationships between the medical and early intervention settings were considered statistically significant with  $p$  values of .000 and .001 respectively. Although the correlation was not statistically significant for the private practice setting ( $p = .098$ ). The variance in confidence for the medical setting was 27%, which accounted for the length of dysphagia experience, and the variance was 15% for the early intervention setting, and 8% for private practice.



Having experience with feeding and swallowing during the Clinical Fellowship (CF) was another demographic factor examined to identify if this type of experience was also associated with increased or decreased confidence with public-school dysphagia management tasks. Findings demonstrated a low, positive relationship ( $r = -.289$ ) with the public-school SLPs who had prior CF experience tending to rate their confidence levels higher than those that did not. This finding was noted to be statistically significant with a  $p$  value of .000. The coefficient of determination ( $r^2$ ) was .08, which indicated that 8% of the variance in confidence was accounted for by an individual's feeding and swallowing experience during their Clinical Fellowship.

Additionally, this study allowed for the investigation of potential correlations between having had graduate coursework in dysphagia and confidence levels with feeding and swallowing management in public schools, as well as the number of master's level dysphagia classes taken and the degree of assurance for all dysphagia responsibilities measured. The Pearson's  $r$  correlation coefficient of -.143 indicated a low, positive relationship between participants having taken dysphagia courses during their graduate program and their perceived confidence. Since this was also a yes or no inquiry, coded as "1" for "yes" and "0" for "no", the Pearson's  $r$  value indicated that public-school SLPs who had done dysphagia coursework at the master's level tended to rate themselves with higher levels of confidence than those who did not. However, the correlation was considered to not be statistically significant, given that the  $p$  value .033 was greater than the predetermined level of significance of .01. Additionally, the coefficient of determination ( $r^2$ ) was 0.02, which indicated that 2% of the variance in confidence was accounted for by an individual taking a graduate-level dysphagia course. A weak, positive correlation ( $r = .365$ ) was found between the amount of master's level feeding and swallowing classes and perceived assurance levels. Those participants who had taken more courses tended to

provide higher confidence ratings for the 17 dysphagia management tasks than those who had taken fewer courses. The correlation between number of graduate-level dysphagia courses taken and confidence was determined to be statistically significant ( $p = .000$ ). In this case, the coefficient of determination was .13, which meant that 13% of the change in average assurance ratings was accounted for by the number of dysphagia courses the public-school SLPs had taken during their graduate studies.

Subsequently, an examination to determine if having continuing education in dysphagia beyond graduate school correlated with increased or decreased confidence revealed a low, positive relationship between the two ( $r = -.414$ ). Overall, the SLPs who indicated having taken professional development in dysphagia post graduation were reported to have average confidence levels for the 17 dysphagia tasks combined that were higher than those who did not have this type of continuing education. The correlation between these two factors was also deemed statistically significant, with a  $p$  value of .000. Approximately 17% of the change in overall assurance reported across subjects was explained by whether the SLP had professional development in feeding and swallowing once they entered the field. A weak, positive relationship ( $r = .440$ ) was also evident in the confidence level reported by SLPs based on the number of professional development courses they had taken on dysphagia. A  $p$  value of .000 also indicated that this correlation was statistically significant and that 19% of the variance in average confidence reported across the feeding and swallowing responsibilities was attributed to how many continuing education courses were taken. The final correlation conducted was to determine if the level of support from educational administrators to provide feeding and swallowing services had an influence on the overall degree of assurance of public-school SLPs for the 17 dysphagia responsibilities combined. A Spearman rho correlation coefficient ( $r_s$ ) of .276 revealed

Table 4.21

*Correlation Between Participants Average Confidence Scores for the 17 Dysphagia Responsibilities and Demographic and Professional Experience Factors*

	Score for 17 questions		
	<i>r</i>	Sig. (2-tailed)	<i>N</i>
What is your Age? (Round up to the nearest whole number)	-0.024	.726	220
How many years of experience do you have working in public schools? (i.e., 0, 1, 5, 12)	-0.224**	.001	219
How many years of experience do you have working with dysphagia (feeding and swallowing) in public schools? (i.e., 0, 1, 5, 12)	0.387**	.000	214
Number of dysphagia Cases at your public school	0.230**	.001	214
Did you have any feeding and swallowing (dysphagia) experience prior to working in public schools?	-0.517**	.000	220
Have you ever worked with feeding and swallowing (dysphagia) patients in a medical setting (i.e., hospital and/or rehab)?	-0.494	.000	220
If yes, how many years in a medical setting? (round up to the nearest year i.e., 5.5 years should be listed as 6)	0.520**	.000	147
Have you ever worked with feeding and swallowing (dysphagia) in an early intervention setting?	-0.331**	.000	220
If yes, how many years in early intervention? (round up to the nearest year i.e., 5.5 years should be listed as 6)	0.393**	.001	63
Have you ever worked with feeding and swallowing (dysphagia) in a private practice setting?	-0.302**	.000	220
If yes, how many years in private practice? (round up to the nearest year i.e., 5.5 years should be listed as 6)	0.276	.098	37
Did you have experience with feeding and swallowing (dysphagia) during your Clinical Fellowship (CF) and/or with a mentor?	-0.289**	.000	220
Did you have feeding and swallowing (dysphagia) coursework in your masters' speech-language pathology program?	-0.143*	.033	220
Number of master's level dysphagia courses taken	0.365**	.000	155
Have you participated in professional development activities (i.e., continuing education courses) in feeding and swallowing (dysphagia) post graduation?	-0.414**	.000	220
Number of professional development courses taken in dysphagia	0.440**	.000	117

*Note.* Yes and no questions were coded as 1 = yes and 2 = no; therefore, a negative correlation would indicate that those who said "yes" would have a higher level of confidence than those who said "no".

\*\*  $p < .01$ . \*  $p < .05$ .

a weak positive correlation between the two variables. Those participants with greater administrative support tended to report higher confidence levels, and those with less support generally indicated lower levels of assurance. A  $p$  value of .000 confirmed that the relationship was statistically significant. A coefficient of determination of .08, suggested that 8% of the variance in SLPs' average confidence was attributed to the encouragement provided by educational leaders within a given public-school district.

## CHAPTER 5

### DISCUSSION

#### **Summary of the Study**

Dysphagia falls under the practice scope of the public-school SLP given the specialized set of knowledge and skills needed to handle the challenges and dangers that result from feeding and swallowing problems (ASHA, 2002, 2007; Moskowitz-Kurjan, 2000). In fact, in most practice settings, ASHA identifies dysphagia management to be the chief responsibility of an SLP (Lefton-Grief, 2008).

The responsibility for dysphagia management of public-school SLPs has expanded in part due to advancements in healthcare and more children with feeding and swallowing risks surviving (McNeilly & Sheppard, 2008). Children who are premature or have disabilities associated with dysphagia often require assistance with feeding and swallowing in the school environment. In general, the numbers of children with disabilities continues to increase. For example, as of 2015, the number of individuals with disabilities between the ages of six and 21 had more than doubled, and the numbers of children with health issues, seizures, and physical limitations had grown by over 50%. Children with these disabilities often experience feeding and swallowing difficulties that need to be managed in a school setting (U.S. Department of Education, 2015, Samuels, 2016). Additionally, more students with special needs are remaining in the public-school district to receive education and related services instead of being sent out of district. This is due to the funding structure (Education Commission of the States, 2012; Power-deFur, 2000) and the right of children to receive equal opportunities under IDEA and a FAPE within a LRE. Students who attend public school and have special needs, including dysphagia, are entitled to receive educationally relevant feeding and swallowing services in that setting

(ASHA, 2010; Power-deFur & Alley, 2008). Dysphagia is considered educationally relevant if it has an impact on a child's academic performance (Marby & Price, 2014), their access to health, learning, and wellness (O'Toole, 2000; Power-deFur, 2015; Power-deFur & Alley 2008), and their safety. Feeding and swallowing problems place a child at high risk for aspiration, choking, or in severe instances death (Homer, 2016). To meet the unique feeding and swallowing needs of students in public school, an SLP must be equipped with the knowledge, experience and confidence to effectively do so (O'Donoghue and Hegyi, 2009).

Even with the knowledge that children with neurodevelopmental issues experience dysphagia most of the time (80–90%) and one quarter to one third of typically developing children present with feeding and swallowing difficulties (Vissoker et al., 2015), the evidence-based literature on public-school dysphagia management is sparse. We know from the ASHA *2016 SLP Schools Survey: Survey Summary Report* that 10.5 % of public-school SLPs nationwide work with dysphagia, and a study by Owre (2006) uncovered that almost half of SLPs in public schools are responsible for dysphagia management. However, the literature examining the confidence and specific training needs of public-school SLPs providing dysphagia management is very limited.

Of the studies available, most mainly focused on the overall satisfaction of public-school SLPs with their professional training in feeding and swallowing and their general confidence to perform dysphagia management. The common themes of these studies were concerns over lack of preparation and reduced assurance, as well as unclear protocols in schools on how to approach feeding and swallowing management (Bailey et al. 2008; Owre, 2001, 2006). Hutchins et al. (2011) found nearly half of their participants needed further clarity on their role in dysphagia management and how to approach it. In 2006, Owre also uncovered the dissatisfaction of SLPs

with their level of education and training in dysphagia and concerns over liability without having the proper training and protocols in place. These findings have served as an impetus for this study, which sought to identify the specific dysphagia tasks SLPs in public schools currently participate in nationwide and their confidence levels with each task. This information specifically explains the feeding and swallowing training public-school SLPs need. Although there is some research providing evidence that highlighted considerations in terms of common feeding and swallowing characteristics for certain special needs populations, there have been no studies to date that addressed the perceived degree of confidence of public-school SLPs in providing the different roles and responsibilities that fall under feeding and swallowing (dysphagia) management in public schools (ASHA 2002, 2007). Furthermore, although Hutchins et al. (2011) reported percentages of school SLPs nationwide that participated in different dysphagia management tasks, there has not been any more recent statistics available on these trends until now. This is particularly important, as the role of an SLP in feeding and swallowing in public schools has grown over time.

To date, there is one study from the United States that looked at the relationship between professional experience and confidence with feeding and swallowing management. They examined swallowing courses taken and general confidence with dysphagia management, as well as professional development training and assurance (O'Donoghue & Dean-Claytor, 2008). The current investigation further explored potential relationship between a wide range of demographic and professional experience factors and confidence levels specifically for dysphagia management tasks. The findings from the study by O'Donoghue and Dean-Claytor (2008) suggested that a positive relationship could potentially exist between study participants' professional experience and perceived assurance for the individual roles of dysphagia

management. This assumption was confirmed in the current investigation, with positive correlations being noted for all professional factors measured (Table 4.21). Other professional experience factors measured in this study were years of experience with feeding in a medical setting, private practice, or early intervention, and experience with dysphagia as a Clinical Fellow. In contrast to O'Donoghue and Dean-Claytor who examined relationships between the graduation year of a school-based SLP and confidence, this research explored if there was a correlation between years practicing as an ASHA certified clinician and assurance with dysphagia tasks in public schools.

Based on findings from O'Donoghue and Dean-Claytor (2008) and Owre (2006) that limitations in knowledge and experience with dysphagia and continuing education opportunities were barriers to conducting dysphagia management in schools, this study aimed at gathering data on the type and extent of education and field exposure public-school SLPs have with feeding and swallowing. It allowed for a greater understanding of potential constraints to effectively providing dysphagia services (Angell et al., 2009). O'Donoghue and Dean-Claytor (2008) offered descriptive data that SLPs perceived their confidence to be affected by limited caseload experience with dysphagia, coursework on feeding and swallowing, lack of medically based feeding experience, and poor resources and support for dysphagia management in schools. Based on these reports, the present research included an examination of trends in the number of graduate level classes and professional development courses received in dysphagia. Information on years of experience in a medical setting, private practice and early intervention was also collected to confirm more definitively the type of preparation a public-school SLP needs in order to provide dysphagia management. These statistics are vital, given the extent of dysphagia responsibilities that a public-school SLP may be required to participate in to manage feeding and



swallowing cases (ASHA, 2002; Hutchins et al., 2011; O'Donoghue & Dean-Claytor, 2008; Owre, 2006). The outcomes highlighted in Tables 4.5 to 4.11 confirm whether public-school SLPs are equipped to promote safe eating and swallowing and prevent life-threatening conditions including aspiration, choking, or pneumonia (Hutchins et al., 2011; O'Donoghue & Dean-Claytor, 2008) and provided a baseline for further training needs.

This study is far-reaching as trends in demographics and professional experience, roles in dysphagia management, and overall confidence for the 17 feeding and swallowing tasks were investigated across the entire United States. Although previous studies by Hutchins et al. (2011) and O'Donoghue and Dean-Claytor (2008) had gathered data on confidence and experience with dysphagia, data were only collected from a small portion of the country. In this study participants were surveyed from all four regions of the United States to gain a more national perspective on the feeding and swallowing training needs of public-school SLPs. Although previous researchers had looked at confidence ratings for general statements of ability to provide dysphagia treatment to children with swallowing and/or feeding disorders, this study, however, investigated confidence ratings for each of the responsibilities required for dysphagia management in order to gauge what skills SLPs are most to least confident with for training purposes.

The results yielded from this study offer strong evidence that a standard dysphagia training protocol is needed to ensure that SLPs are sufficiently trained to deliver safe and efficient feeding and swallowing support in public schools. It is vital to understand the tasks public-school SLPs tend to more frequently participate in and those that they have the least exposure to, to prioritize dysphagia training content. For example, SLPs may need more expansive training for those tasks that are most commonly performed. Feeding and swallowing responsibilities that occur infrequently are equally as important from a risk perspective. The less

often a task is practiced, the higher the likelihood of liability due to error, and the greater need for training (Lambert, 2004; O'Donoghue & Hegyi, 2009). It is equally necessary to investigate the assurance levels of both SLPs currently working with dysphagia and those who are not to help steer a focus for further training. Although public-school SLPs may not be currently providing this service in schools, it is important to train this group of professionals to be ready and have the assurance to perform this function should the need arise for them to provide this service for future students on their caseload. Additionally, investigating the relationship between professional experience and degree of confidence of both groups for the 17 feeding and swallowing tasks helps guide the learning needs of public-school SLPs in the domain of dysphagia.

This study is of great significance because it provides a unique contribution to the area of study. Hutchins et al. (2011) recommended that future research included a nationwide investigation of perceptions of confidence with dysphagia management. That was accomplished through this research. This is the first study that examined confidence levels for a nationwide sample of public-school SLPs for the 17 dysphagia tasks. Although O'Donoghue and Dean-Claytor (2008) looked at overall confidence levels for feeding and swallowing management, this study, by examining confidence levels for all 17 tasks, identifies where more or less training is needed. Confidence ratings, in many cases, indicate that SLPs do not feel prepared and need additional training. This is particularly important since ASHA's Special Interest Divisions 13 and 16 goals have been to develop more feeding and swallowing trainings and district wide dysphagia protocols. The data from this study provides insight into what areas to target (Owre, 2006). This research compared overall assurance levels for SLPs who practice dysphagia management in public schools and those who do not, therefore allowing inferences to be made

about the roles of experience and confidence. Most importantly, this is the first study to explore the education and clinical training needs of SLPs who work exclusively in public schools instead of surveying all school-based SLPs.

### **Organization of the Chapter**

This chapter provides an interpretation of the specific dysphagia management tasks public-school SLPs are responsible for, both across the United States and by region. This broad perspective adds to the understanding of what SLPs need to be prepared for when working with dysphagia cases in public schools. An analysis of the range of confidence levels that SLPs nationwide have in performing the 17 feeding and swallowing tasks offers insight into the population of public-school SLPs and their administrators, and the type of knowledge, skills, instruction, and support they may need. A discussion of relationships that exist between professional experience characteristics and overall assurance levels in performing the dysphagia management tasks is included to illustrate the type of education and training experience that could enhance public-school SLPs confidence in this domain. Comparisons of overall assurance levels between the groups that do and do not practice dysphagia management in public schools allowed for inferences to be made about the role of experience and confidence.

### **Summary of the Findings of This Study**

#### **RQ: Roles and Responsibilities of SLPs in Dysphagia in Public Schools**

An examination of the dysphagia tasks that public-school SLPs tend to participate in revealed the most common responsibilities were recognizing signs and symptoms of choking (57.3%), interpreting a case history (50.9%), recognizing signs and symptoms of aspiration (45.9%), and engaging in feeding and swallowing (dysphagia) team collaboration with school nurses and school staff (44.1%). Table 4.14 lists the 17 dysphagia tasks in order of those reported

to be most to least performed. Public-school SLPs and their administrators should use these national outcomes to determine the focal points of professional development opportunities that they offer. Knowing that liability exists in performing tasks that are practiced infrequently, having an understanding that diagnosing a feeding or swallowing disorder, and fostering nutritional status are the least common tasks, offers justification to train in these areas as well.

Since this research study confirmed that public-school SLPs, across the country, tend to have a low number of dysphagia cases ( $M = 1.20$ ), it is even more critical to educate and train those professionals with limited experience to be adequately prepared for such cases. A study by O'Donoghue and Hegyi (2009) underscored the importance of having continuous experience and training in a particular area to be confident and competent. The liability risk rises with more limited exposure. This data point further verifies the need to provide additional education and training in dysphagia management for such SLPs (Lambert 2004). This study found that almost 40% of public-school SLPs were responsible for dysphagia management in their schools, and the number of years working with dysphagia was an average of 3. This represents a large portion of the sample population, highlighting the importance of investigating the confidence levels and training needs of such clinicians in the area of feeding and swallowing, as well as the types of feeding and swallowing tasks they have been exposed to while participating in dysphagia management.

Understanding the roles and responsibilities that public-school SLPs undertake in feeding and swallowing management and their confidence levels to do so based on region of the United States, gives direction to educational administrators as to what degree and type of coursework or experience should be instituted to support an SLP's preparation to perform this service. According to Homer et al. (2016) and O'Donoghue and Hegyi (2009), school districts can

consult with Training and Technical Assistance Centers (TTAC) to arrange professional development workshops by SLPs who specialize in feeding and swallowing to provide essential knowledge and skills, information on resources, and supports and materials available to manage dysphagia. These specialists, in pediatric dysphagia, can provide mentorship to public-school SLPs with dysphagia cases and in creating policies and frameworks for dysphagia management in their school and district to evaluate and treat the population in a safe and competent manner. All other stakeholders would then be educated on these policies and frameworks to promote student safety, health, and development. This would include individuals such as parents, nurses, teachers, teacher's assistants, occupational therapists, physical therapists, lunch staff, and school administrators. Ongoing monitoring to determine if feeding plans were being executed appropriately and consistently would be essential.

#### **RQ: Roles and Responsibilities in Feeding and Swallowing (Dysphagia) Management by Location (Region)**

Expanding upon the evaluation by Hutchins et al. (2011) on trends in dysphagia tasks performed in four states, this study examined feeding and swallowing responsibilities across all regions in the United States. By doing so, it is apparent that dysphagia management is quite similar for public schools nationwide. No significant differences were identified with the exception of interpreting Modified Barium Swallow (MBS) studies, which were more frequently conducted in the Northwest and South regions. This provides an argument for developing a universal feeding and swallowing training that targets all 17 dysphagia responsibilities, with an additional focus on MBSS study analysis in those two regions. It also provides insight on what should be addressed for feeding plans and protocols at the school and district level. Since the survey outcomes have confirmed that all 17 tasks are being conducted across the United States, learning how prevalent each of these are for the four regions offers a starting point to customize

training protocols aligned with these trends. For example, engaging in dysphagia team collaboration ( $p = .997$ ), performing a feeding and swallowing evaluation ( $p = .932$ ), recognizing signs and symptoms of choking ( $p = .785$ ), assisting the student with safe eating and swallowing ( $p = .779$ ), and determining the educational relevance of providing dysphagia services were most frequently reported. Geographically, public-school SLPs provide feeding and swallowing services in both rural and urban neighborhoods and in all four regions across the country. This underscores how profound these findings are and the importance of widespread training.

### **RQ: Dysphagia Competency Areas That SLPs Report Having Less Confidence With**

An examination of mean confidence of the total sample for the 17 dysphagia tasks offers information to school leaders on where to focus their efforts in further educating and training for their speech-language pathology staff. The responsibilities in which the lowest average assurance ratings were reported serve as a starting point. An assumption was made that perceived confidence was less for tasks that SLPs did not engage in as frequently. This was confirmed by the outcomes listed in Table 4.14, where subjects indicated having the least experience with the four roles that they had the least confidence with. These included interpreting a Modified Barium Swallow study (MBSS), diagnosing a feeding or swallowing disorder, performing a dysphagia evaluation, and fostering nutritional status in a child with a feeding and/or swallowing issue.

Collectively the sample of public-school SLPs had, at most, moderate levels of confidence for the 17 tasks of dysphagia management. This indicates an opportunity for public-school districts nationwide to promote enhanced assurance of SLPs in providing feeding and swallowing services. Although it is top priority to train SLPs who currently provide dysphagia management in public schools, it is equally important to provide training for those who do not so they are prepared for possible future feeding and swallowing cases. It should also be considered

that those who do not provide dysphagia services in their public school may choose not to due to lower levels of confidence than the group who does. Therefore, putting efforts into training them may boost their confidence and encourage them to engage in these tasks.

**RQ: Comparison of Confidence Levels With the 17 Dysphagia Clinical Competencies Between SLPs Who Have Dysphagia Cases and Those Who Do Not**

It was anticipated that the average confidence level of participants who had experience with dysphagia in public schools would be greater than the group that did not for each of the 17 dysphagia tasks studied. A Pearson's chi squared test supported this hypothesis, with the group who did not have experience with dysphagia reporting lower levels of confidence to engage in the tasks of dysphagia management. The Pearson's chi-squared test for all 17 dysphagia responsibilities was indeed significant at a .000 level of significance ( $p = .000$ ,  $df = 4$ ). A significant difference in overall confidence was also found for the two groups ( $p = .004$ ,  $df = 63$ ). Additionally, a two independent samples  $t$  test revealed that for the 17 tasks combined the overall confidence level was lower for the group that did not have dysphagia cases and that the difference in average confidence between the two groups was statistically significant. Given these findings, it is advised to not only focus efforts on training experiences for SLPs in public schools who perform feeding and swallowing tasks but also for those who do not. For the group that did not perform dysphagia services, this would help them be ready to handle feeding and swallowing issues should students with these needs come onto their caseload. It is hypothesized that having lower average confidence levels may serve as a deterrent for some SLPs in participating in dysphagia management. Training public-school SLPs who do not perform dysphagia management could potentially encourage increased assurance levels and subsequently greater participation in these roles in public schools. Certainly, this is an area for future studies discuss.

## **RQs: The Relationship (and the Nature of the Relationship) Between Demographic and Professional Experience Characteristics of Public-School SLPs and Confidence**

Demographically, since there is a relatively even distribution of public-school SLPs across the country providing feeding and swallowing services, training needs to happen in all regions. Due to this, recommendations can be easily generalized to the total population of SLPs in the United States. Although three quarters of the sample population lives in urban areas, a quarter still lives in rural neighborhoods. In this case, if face-to-face training is not available for feeding and swallowing then training could occur online. With participants ranging in age from 26–75, it would be necessary to consider the learning style of participants to maximize their learning outcome. Also, since the span of professional experience ranged from one to 41 years for SLPs nationwide, training must be geared to all levels from novice to seasoned clinicians. Regardless of the extent of field experience an SLP may have, it is paramount to offer knowledge and experience that draws on the most current, evidence-based practices in school-based dysphagia management. Interestingly, it was discovered that only .9% of participants were board certified in dysphagia. With such a low statistic, consideration needs to be given to recruiting and training more specialists in feeding and swallowing.

Knowing that 30.9% ( $n = 68$ ) of participants started at public school with no feeding and swallowing exposure, school-district administrators need to be aware that the staff they hire may come with limited to no dysphagia experience. In this case, arranging dysphagia training would be necessary for SLPs who took on dysphagia cases to promote safe feeding and swallowing care. The study's outcomes on trends in dysphagia tasks performed nationwide, and confidence ratings could be used by building principals and district leaders to determine where training should begin and at what level. This could be in the form of professional development, workshops, attending academic courses, observing other professionals, or mentorship by a



trained professional in dysphagia in the schools. A feeding consultant could also be hired to a public school to help train the SLP and other team members, and set up feeding and swallowing protocols and treatment plans that promote each child's health and safety (Homer 2016).

Gathering specific information on the tasks that the SLP would be participating in and surveying their confidence levels for these responsibilities could provide another layer of data to guide the direction for training.

As previously stated, it is imperative to know the type and extent of training public-school SLPs possess who have had prior dysphagia coursework or experience. This can be used as a stepping-stone for creating training approaches that further extend the specific foundation already gained. Based on this study, we learned that a majority of SLPs who had prior dysphagia skill experience obtained this in a medical setting, the second most common setting was early intervention, followed by private practice. Since feeding and swallowing responsibilities vary across practice environments, district leaders should investigate the type of feeding and swallowing services that an SLP participated in before coming to work at a school and if similar tasks were involved. This would offer more data to personalize training accordingly. For instance, additional skill-based instruction may be warranted for those dysphagia activities that are unique to the school and that are approached differently in a school environment compared to a medical, early intervention, or private practice setting. Because a clinical fellowship is a critical time to gain further direct mentorship post-graduation from a master's speech program, it is helpful to understand the extent to which dysphagia exposure happens during that time to prepare SLPs for clinical practice in feeding and swallowing in public schools.

The mean number of courses participants had at the master's level was 1.34, which offered information on trends in foundations that SLPs have in feeding and swallowing when

entering the field. Very few SLPs tended to have more than two courses in dysphagia, with one course being the most common. The outcomes of this research investigation on trends in master's level dysphagia coursework taken countrywide serves to assist public-school SLPs and their administrators in recognizing the degree of preparedness to work with this population and when and what additional education is needed in this area. With one quarter of the sample (26%,  $n = 59$ ) not having a prior dysphagia course in graduate school, the need to provide knowledge-based training is evident. Similarly, in terms of professional development in dysphagia post-graduation from a master's program, it can be concluded that not every SLP who is hired in a public school has already taken continuing education in dysphagia. Although the majority in this study had professional development (71.8%), 28.2% did not. Therefore, if an SLP works with feeding and swallowing cases or may do in the future, it is important to determine the nature and breadth of continuing education they have had as another data point in identifying further dysphagia training needs. Understanding the number of courses taken provides insight into the depth of exposure. Each of these statistics offers guidance on the level of preparation in feeding and swallowing. This study found that there exists a positive relationship between confidence and professional development: the more professional development courses a participant received, the higher they rated their confidence with dysphagia management. These results conflicted with the findings from the study by O'Donoghue and Dean-Claytor (2008), which reported the opposite: the less training participants had, the more confident they were.

It was anticipated in this study that significant correlations would exist between some of the demographic and professional experience factors and participants' confidence ratings in performing the 17 dysphagia management tasks. However, it was unclear which factors would be related to assurance ratings and the nature of those relationships. Following a correlational

analysis, it became evident that relationships did exist between the overall level of confidence of a public-school SLP to participate in dysphagia management tasks and their age, years of experience in public schools, years of experience working with dysphagia in schools, and experience working with dysphagia before public schools. Correlations were also evident between assurance levels and having prior feeding and swallowing experience in a medical, early intervention, or private practice setting; duration of dysphagia experience in these settings, having feeding and swallowing experience as a Clinical Fellow, having master's level and professional development dysphagia courses, and the number of these courses taken. A relationship between the degree of administrative support to perform dysphagia management and confidence was also found. Negative relationships were only identified between age and confidence, and years of experience in a public school and assurance. The younger an SLP was and the less experience they had had working in a public school, the higher their confidence. Conversely, the more years of experience an SLP had had working with dysphagia in a public-school, medical setting, early intervention, or private practice; the more confidence they considered themselves to have with dysphagia management. Having had prior experience with feeding and swallowing before working at a public school also resulted in higher confidence ratings. This held true for experience in the medical, early intervention or private practice arenas. Low positive relationships existed between confidence and dysphagia experience in a Clinical Fellowship, master's level dysphagia coursework, and professional development. Therefore, SLPs that had received graduate level feeding and swallowing classes, continuing education in dysphagia, or feeding experience as a CF tended to rate their confidence higher. The nature of the relationship was the same with respect to the number of master's level dysphagia courses or professional development classes taken. The greater the number of courses, the higher the

assurance level a public-school SLP tended to have for dysphagia responsibilities. The One-Way ANOVA showed that where you live played a medium role in confidence with dysphagia management tasks. Each correlation conducted for the demographic and professional experience factors was significant except for age. These are all valuable data points to consider when seeking to increase the assurance level of public-school SLPs to perform dysphagia management tasks.

This study is the first of its kind to explore the presence or absence of dysphagia resources in public schools, the types of resources that are available, and the degree of support from school leaders for dysphagia management. Based on this study, nearly 75% of participants reported not having dysphagia resources at their school. From the quantitative data gathered on perceived levels of administrator support, it was evident by a mean rating of 1.91 ( $SD = 1.30$ ) that support for dysphagia management was low. Given these statistics coupled with qualitative perspectives provided by participants as to why there was a general lack of support for dysphagia management, it is evident that there is a need for further education of district leaders on the importance of the role of SLPs in feeding and swallowing in public schools. Lack of administrative support poses a significant barrier to providing the specific dysphagia programming that a child may need, or offering feeding and swallowing services in a safe, appropriate and high-quality manner. It is obvious that there is still work to be done to increase school leaders' awareness of the need to address the challenges in the public-school setting, therefore ensuring a safe school environment where a child's feeding needs are being addressed appropriately with adequate support and resources to do so. A correlation was performed to determine if the level of support from district leaders influenced SLPs overall confidence levels for the 17 dysphagia management tasks. It was hypothesized that those SLPs with the least

support would perceive their confidence to be lower than those with greater administrative backing. A weak positive relationship ( $r = .276$ ) between administrative support and confidence was found and determined to be statistically significant (Sig = .000). The outcomes of this study indicate that the more support SLPs have from their administrators, the more confidence they possess in handling dysphagia cases.

These findings reinforce the need for training educational administrators about this relevant area of practice in schools, and they indicate that not having proper support and resources for feeding and swallowing pose an issue to the safety, health and development of children with dysphagia. It also poses a barrier to participation in social eating experiences (O'Toole, 2000; Power-deFur, 2015; Power-deFur & Alley 2008), and it creates liability if a child is being treated by a speech therapist with reduced confidence given the risks of choking and aspiration. District leaders must be informed of the dangers of choking and aspiration in children with feeding and swallowing problems and what the training needs of public-school SLPs are in order to provide this service safely and efficiently. Administrators need to be cognizant of the relevance of SLPs providing this service in schools and understand the types of supports and resources that SLPs perceive they need to ensure the health and safety of the children being served (Homer, 2016). This study highlights the type of administrative support participants do and do not receive, which illustrates for building principals, directors of special services, and superintendents where gaps are and what they need to focus on providing. The study results confirmed that in most states SLPs performed feeding and swallowing services in public schools. However, it was revealed that in Iowa, Florida, and Minnesota they do not have an administrative school code for performing feeding and swallowing services in public schools. In Florida, participants indicated that the role of feeding and swallowing is given to occupational

therapists. This is important to note given the statistics on the prevalence of dysphagia in public schools, its educational relevance, and the scope of practice of a speech-language pathologist.

### **Policy and Practice Considerations for Educational Administrators: Suggestions for Dysphagia Management Training and Support**

This nationwide survey reported the extent of prior experience and training public-school SLPs had in feeding and swallowing, which can be used as a resource by building principals and educational administration to discern dysphagia training needs and what additional professional development in dysphagia may be warranted for speech-language pathology staff. Relevant training protocols can then be designed to further foster the knowledge and experience of in-district SLPs with different aspects of feeding and swallowing management. The research confirms that preparation and confidence are necessary prerequisites for engaging in dysphagia programming. Since provision of feeding and swallowing services in public schools are educationally relevant and required within the scope of practice of an SLP in this setting (ASHA, 2002, 2007) having insight into levels of confidence is essential to understanding the type of resources and support SLPs need to feel assured in their ability to provide feeding and swallowing management in an appropriate, safe and effective manner.

To encourage dedication of public-school SLPs to offer the highest quality of feeding and swallowing care, directors of special services and building principals should create specialized in-service or review classes throughout the year that align with the roles public-school SLPs play in dysphagia management and their self-assurance with those tasks. To identify the focus of these in-service programs, school leaders should gather data for their own specific group of SLPs by having them complete the survey from the current study to see which competencies their staff feel the least or most confident with. Additionally, principals should interview their staff directly

to get a qualitative analysis of their opinions on dysphagia management in the school and how well equipped they believe they are in this area of practice (Creswell, 2009). This can be compared to nationwide trends. Continuing education activities, guidance, and support by the school leadership should then be customized based on the identified learning needs of the group and each individual stakeholder. Professional development needs to be consistent and dynamic, ensuring that all members of the school dysphagia team keeps informed of current management practices and principles of diagnosis (Homer, 2008).

Mentorship programs could be instituted where more experienced public-school SLPs in feeding and swallowing could coach less experienced SLPs working in this area. They could provide them with ongoing feedback and ideas that enhance the dysphagia programs they are implementing. School administrators could also serve as mentors by clarifying information, answering questions, offering feedback on performance, and guiding SLPs to available resources in feeding and swallowing management. Building principals could set up regular meetings with SLPs in their schools to review and support the professional learning goals in dysphagia to encourage maximal outcomes for the students they serve (O'Donoghue & Hegyi, 2009). This could include offering ongoing environmental support and guidance. District leaders could also consider providing funding for their SLPs to take academic courses in dysphagia or to subscribe to scholarly research journals on feeding and swallowing or special interest groups on dysphagia.

It is important for district leaders to understand the cost of clinical resources and materials needed for their SLPs to provide the highest quality feeding and swallowing services for the cases they serve. These fees may vary depending on the extent of dysphagia needs that children in the public school have. Also, consideration needs to be given to the costs that may be associated with providing in or out-of-district professional development on dysphagia to speech-

language pathology staff. Educational administrators should be tasked with determining from their existing budget what they can allocate towards dysphagia training and resources from their available funding. District leaders should consider accessing additional monies from state and federal grants and participating in local fundraising efforts with business and organizations.

The outcomes of this study should be used as a basis for mapping out what evidence-based literature, clinical materials, and resources on dysphagia is available to public-school SLPs to promote increased assurance and readiness to perform feeding and swallowing management functions in public schools (Gulick & Urwick, 1937). The data collected on feeding and swallowing tasks that public-school SLPs felt least and most confident with and trends in their dysphagia experience means district administrators could assign a task force to hold think tank sessions focused on designing dysphagia educational and experiential training workshops on feeding and swallowing. Through joint programming and planning, this group of designated “champions” can pinpoint the specific training that their district’s SLPs need to perform feeding and swallowing services that promote student learning in school. The planning team could investigate what challenges or barriers their public-school SLPs might be facing and how they might be impacting their level of confidence across the dysphagia clinical competency areas (Fowler, 1999).

This task force should be charged with creating a district-wide dysphagia protocol for SLPs and other staff in public schools to follow. In developing these feeding plans, the task force needs to (a) create a shared set of common objectives (Fowler, 1999; Schein, 1992) for students requiring dysphagia management, (b) analyze the training needs of school staff that carry out the program, and then (c) provide staff instruction on how to carry out the feeding plans (Fowler, 1999). This is particularly important as ASHA Special Interest Division 13 and 16 goals were



noted to be the development of more feeding and swallowing trainings and district dysphagia protocols (Owre, 2006). A dysphagia team should be established, and district and school feeding policies need to be developed that offer a streamlined process for promoting the health, safety and success of children at school who present with eating and swallowing difficulties. With the oversight and direction of administrators, procedures for efficient dysphagia management should be well-defined, and a transparent outline of implementation procedures needs to be included that highlights how all dysphagia issues are to be addressed. This should include which team member (SLPs, nurses, occupational therapist, teachers, classroom assistants, families, children) are responsible for handling each responsibility within the dysphagia management program (Gulick & Urwick, 1937; Homer, 2008, 2016; Schein, 1992). The most qualified and knowledgeable professional in pediatric feeding and swallowing at a public school tends to be the SLP. Therefore, in many cases the SLP should take the lead in designing and executing feeding plan and protocols (Homer, 2008).

The school building administrator would then need to develop a coalition of policy actors that were empowered to carry out this vision. Interdisciplinary team meetings could then be held to review the protocol and ensure that all stakeholders have proper training (Homer, 2008; Kotter, 1996). To further provide guidance to SLPs on how to handle dysphagia in schools, having statewide procedure and practice guidelines is essential (Aarvedson & Homer, 2006; O'Donoghue & Hegyi, 2009).

Strong partnerships between professionals and parents are key to the effectiveness of dysphagia programs. Factors to consider in developing a dysphagia program include the skill set of each team member, child factors, communication and collaboration with families, and the environment feeding and swallowing activities take place. The primary goal is for students to

achieve adequate nutrition for growth and development and to eat safely while being infused into the educational opportunities that their peers have (Angell et al., 2009).

It is suggested that an assessment team be appointed by the school administration to review policy adoption and implementation procedures for feeding and swallowing programs being offered. Once additional professional development, mentorship, and dysphagia protocols and policies are in place, both SLPs who provide dysphagia management and those who do not could be asked to rate their confidence level across the 17 dysphagia responsibilities. This could then be compared to their ratings of confidence prior to implementation to determine the benefits (Fowler, 1999). Focused groups could also be conducted with families to determine their satisfaction with the team-based dysphagia management program in place (Angell et al., 2009).

Furthermore, the comprehensive dysphagia competency verification tool that ASHA has developed could be adapted to measure the proficiency levels of school-based SLPs to perform feeding and swallowing management tasks that are specific to pediatric populations in public schools. Currently, there are no assessment instruments that track the necessary benchmarks met by public-school SLPs to provide educationally relevant feeding and swallowing services. With such an instrument, in-district experts in dysphagia or outside feeding consultants could evaluate the abilities of SLPs in public schools to treat feeding and swallowing dysfunction. Additionally, the SLP can assess their student's feeding and swallowing outcomes once they implement dysphagia support. Given the findings from this study on the degree of training and confidence public-school SLPs have with dysphagia management, it is imperative that ASHA consider changes in policy, which would mandate that all educationally relevant dysphagia issues present in public schools be addressed. This is important to maintain the health and safety of children with dysphagia.

In addition to targeting the dysphagia training needs of public-school SLPs, the study's findings revealed that 60% of participants had the lowest level of support from administrators for dysphagia management. This highlights the necessity for educating district leaders about feeding and swallowing management in schools and its educational relevance, the liability of not addressing it, and the role of an SLP in providing this service in a public school.

### **Future Directions for Research**

This research investigation identified a positive relationship between experience and confidence when evaluating the group of SLPs who practiced dysphagia management in their school and those who did not. Speech-language pathologists who provided dysphagia management in their public school reported statistically significantly higher overall confidence for the 17 feeding and swallowing tasks than the group who did not provide dysphagia services. Given these data points, the next step would be to determine if those who do not provide dysphagia management in their schools choose not to participate in feeding and swallowing tasks based on their lower perceived confidence levels. Studies should be conducted to determine if a relationship exists between confidence levels with feeding and swallowing management and willingness to engage in this service at the public-school level. An extension of this analysis would be to determine other factors, besides experience, that influence the group who does not perform feeding management to report lower assurance ratings. This would clarify what aspects need to be addressed to improve confidence in managing dysphagia in schools.

In addition to measuring the willingness of public-school SLPs to engage in dysphagia management tasks, a follow up study should be conducted nationally to ascertain public-school SLPs level of competency to perform the 17 feeding and swallowing responsibilities. This would provide important information on the preparedness of SLPs to provide efficient dysphagia

management services. Thus, further verifying the dysphagia training needs of the population at large. Before taking on dysphagia cases, a public-school SLP should demonstrate competency in this area of practice (Homer, 2016, Power-deFur, 2000). SLPs need to understand their scope of practice in feeding and swallowing and be trained and competent in aspects of prevention, evaluation, and intervention methods (ASHA, 2002).

Knowing the trends in dysphagia responsibilities across public schools nationally, it would be prudent to also examine the type of content that is being covered in both master's level and professional development dysphagia courses that public-school SLPs tend to take nationwide. Are courses primarily knowledge-based? Is there a clinical application focus? Is team collaboration discussed? (Gulick & Urwick, 1937, O'Donoghue & Hegyi, 2009). This study also showed the percentage of public-school SLPs that had prior training in dysphagia management before coming to a public school and in what setting(s). The average length of experience in each setting was also determined, and a statistically significant relationship existed between years of feeding and swallowing experience in different settings and confidence levels. The next step would be to identify if the prior experience of SLPs nationwide was in pediatric dysphagia and to what extent. This knowledge and experiential data could help identify training gaps and guide future programming.

With the demographic and professional experience data from the survey, a categorical analysis could further be conducted by separating the subjects into specific groups based on explicit characteristics, such as number of years of experience in the field, amount and type of dysphagia cases, and prior dysphagia training and professional coursework, to investigate response patterns in assurance ratings. This would provide additional data on the relationship between different combinations of demographics, experience variables, and confidence with

feeding and swallowing management for the 17 dysphagia responsibilities. Therefore, allowing for more understanding about the characteristics that promote the greatest amount of confidence or result in the least assurance, serving as another valuable data point in determining dysphagia training needs of public-school SLPs.

Since almost a third of SLPs across the United States enter the public-school setting with no prior dysphagia experience, it is imperative to explore what dysphagia training protocols are currently being executed in school districts across the country as well as public-school SLPs satisfaction with those trainings. Do they feel their confidence has increased after the training? Understanding the percentage of public schools nationally that provide dysphagia training for speech-language pathology staff and the nature of the training being provided would provide valuable insight into the direction that future educational programming should take (Homer et al., 2016; O'Donoghue & Hegyi, 2009). For example, in the literature O'Donoghue and Hegyi (2009) highlighted programming offered through the Virginia Department of Education. It included 11 regional feeding and swallowing workshops, two other workshops with a specialized focus and additional online learning modules. In their article, they provided a comprehensive outline of all topics that were covered.

In assessing the literature base, very little information was available on public-school administrator's perceptions towards SLPs providing feeding and swallowing services in schools, or their knowledge about feeding and swallowing practices and its educational relevance. Hence, this would be another relevant area to probe by surveying or conducting focus groups with district leaders to gauge the type and extent of education and outreach that may be warranted these stakeholders. Examples of outreach may include having the speech-language pathology staff, nurses, and other relevant team members discuss the legal responsibility to provide this

service, the educational relevance, and safety issues associated with feeding and swallowing problems that exist in a school environment such as choking and aspiration (Homer, 2008).

### **Study Limitations**

It may be viewed as a limitation to some that most participants in this national study were White and the sample lacked diversity. However, it is important to recognize that data were collected from participants in an equal number of states across the country, confirming that this was truly representative of the population of public-school SLPs at large. Similarly, most respondents identified with coming from an urban setting. Since the sample population was evenly distributed across the four regions of the country, these statistics offer an accurate picture of the geography of public-school SLPs.

A recognized limitation of this research was potential barriers to reaching all intended respondents. Most of the emails available through the ASHA directory for members of Special Interest Groups (SIGs) 1, 13, and 16 were work emails. As the intended population for the study sample was public-school SLPs, it was necessary to account for a potentially lower number of responses due to firewalls at public schools preventing emails from being received or emails going to spam and either not being viewed or possibly deleted. To account for this potential challenge, the survey was also posted multiple times on the ASHA SIG 1, 13, and 16 forums where the pool of participants that were individually emailed belonged to.

Having qualitative questions on the survey provided additional data that supported the quantitative findings. However, the data were so robust that some information was superfluous and irrelevant to the study and needed to be eliminated. In reviewing the responses for how many years of experience with feeding a participant had in different settings (i.e., medical, early intervention, and private practice) many respondents provided both quantitative and qualitative

answers. In retrospect, this could have been a forced choice response to get discrete numbers versus needing to code narrative information responses. Also, comprehensive data could not be gathered on professional development trends in feeding and swallowing due to some responses being vague or left incomplete. However, data from a portion of the respondents were used to get a general understanding of average continuing education hours accrued in feeding and swallowing.

When interpreting participants' ratings of their confidence in performing the 17 dysphagia tasks, data needed to be analyzed bearing in mind the role that individual perceptions or biases could potentially play. It was vital to recognize that preconceived notions of what a SLP in a public school should or should not feel comfortable with, could result in assurance ratings that were more aligned with the beliefs of a public-school SLP rather than how confident they actually felt in performing the different feeding and swallowing responsibilities.

Finally, since the inception of this study and the data being collected, ASHA has published a practice portal outlining the feeding and swallowing scope of practice of SLPs (ASHA, 2016). Although these are not specific to the school setting, there are additional dysphagia responsibilities that were not surveyed in this study. These could be investigated in future research to determine which of these tasks public-school SLPs participate in at their school and their assurance levels for those additional roles that they are performing.

## **Conclusion**

In conclusion, this study contributes significantly to the limited body of literature on the topic of pediatric dysphagia in a public-school setting. It is the first study to be conducted in this realm since 2011, and it is unique in that it focused specifically on dysphagia management in public schools versus school settings overall. Now public-school SLPs have a resource on recent

trends in dysphagia responsibilities nationwide and patterns of confidence in performing these roles. It is now known that there is a direct relationship between experience and assurance with feeding and swallowing management, and specific demographic and professional experience factors have a direct relationship to the degree of confidence public-school SLPs have for the different dysphagia responsibilities. Public-school SLPs should use these findings as a tool to be introspective and identify their own individual training needs in dysphagia to perform this role effectively at their public school. Likewise, educational administrators should utilize this data as well as overall trends in experience of public-school SLPs with feeding across the country to determine and support the dysphagia training needs of their staff members.



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## APPENDIX A

### INSTITUTIONAL REVIEW BOARD APPROVAL



April 4, 2018

Natalie Neubauer

Dear Ms. Neubauer,

The Seton Hall University Institutional Review Board has reviewed the information you have submitted addressing the concerns for your proposal entitled "Dysphagia Management in the Public-School Setting: The Education & Training Needs of School Speech-Language Pathologists." Your research protocol is hereby accepted as revised and is categorized as exempt.

Please note that, where applicable, subjects must sign and must be given a copy of the Seton Hall University current stamped Letter of Solicitation or Consent Form before the subjects' participation. All data, as well as the investigator's copies of the signed Consent Forms, must be retained by the principal investigator for a period of at least three years following the termination of the project.

Should you wish to make changes to the IRB approved procedures, the following materials must be submitted for IRB review and be approved by the IRB prior to being instituted:

- Description of proposed revisions;
- *If applicable*, any new or revised materials, such as recruitment fliers, letters to subjects, or consent documents; and
- *If applicable*, updated letters of approval from cooperating institutions and IRBs.

At the present time, there is no need for further action on your part with the IRB.

*In harmony with federal regulations, none of the investigators or research staff involved in the study took part in the final decision.*

Sincerely,

Mary F. Ruzicka, Ph.D.  
Professor  
Director, Institutional Review Board

cc: Dr. Gerard Babo

Office of Institutional Review Board  
Presidents Hall • 400 South Orange Avenue • South Orange, NJ 07079 • Tel: 973.313.6314 • Fax: 973.275.2361 • [www.shu.edu](http://www.shu.edu)

O M E F O R T H E M I N D , T H E H E A R T A N D T H E S P

## APPENDIX B

### SURVEY INSTRUMENT: DYSPHAGIA MANAGEMENT IN THE PUBLIC SCHOOL SETTING: THE EDUCATION & TRAINING NEEDS OF SCHOOL SPEECH-LANGUAGE PATHOLOGISTS

Please complete this survey only once:

#### **Part 1:**

##### **General Demographics:**

- A) What is your Gender? (Please Check One) **Male Female Other**
- B) What is your Age? (Round up to the nearest whole number)  
\_\_\_\_\_
- C) What is your Ethnicity? (Please Check One) **Hispanic or Latino, Not Hispanic or Latino**
- D) What is your Race? (Please Check One) **White, Black or African American, American Indian of Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, Some Other Race (Specify)\_\_\_\_\_**
- E) What state do you work in? \_\_\_\_\_
- F) In what geographic location is the public school you work at? (Please circle one) **Urban Rural**
- (**Urban:** Includes all territory, population, and housing units located in urban areas (UAs) and in places of 2,500 or more inhabitants outside of UAs; **Rural:** Includes all territory, persons, and housing units not defined as Urban)

##### **Professional Experience Demographics:**

- G) Are you an ASHA certified speech-language pathologist? **Y or N**
- H) Are you a board-certified dysphagia specialist? **Y or N**
- I) How many years of experience do you have as an ASHA certified speech-language pathologist? \_\_\_\_\_
- J) Is the public school your primary place of employment? **Y or N**



- K) How many years of experience do you have working in the public schools?  
\_\_\_\_\_
- L) How many years of experience do you have working with dysphagia (feeding and swallowing) in the public school? (i.e. 0, 1, 5, 12) \_\_\_\_\_
- M) How many students do you have on your caseload at the public school that require dysphagia (feeding and swallowing) services? (i.e. 0, 1, 5, 12)  
\_\_\_\_\_
- N) Did you have any feeding and swallowing (dysphagia) experience prior to working in the public schools? **Y or N**
- O) Have you ever worked with feeding and swallowing (dysphagia) patients in a medical setting (i.e. hospital and/or rehab)? **Y or N If yes, how many years?** \_\_\_\_\_ (round up to the nearest year-i.e. 5.5 years list as 6)
- P) Have you ever worked with feeding and swallowing (dysphagia) in an Early Intervention setting? **Y or N If yes, how many years?** \_\_\_\_\_ (round up to the nearest year-i.e. 5.5 years list as 6)
- Q) Have you ever worked with feeding and swallowing (dysphagia) in a private practice setting?
- **Y or N If yes, how many years?** \_\_\_\_\_ (round up to the nearest year-i.e. 5.5 years list as 6)
- R) Did you have experience with feeding and swallowing (dysphagia) during your Clinical Fellowship (CF)/and or with a mentor? **Y or N**
- S) Did you have feeding and swallowing (dysphagia) coursework in your masters' speech-language pathology program? **Y or N If yes, how many courses?** \_\_\_\_\_ **If yes, were they pediatric, adult or both?** \_\_\_\_\_
- T) Have you participated in professional development activities (i.e. continuing education courses-CE) in feeding and swallowing (dysphagia) post-graduation? **Y or N If yes, how many CE credit hours have you accrued to date?** \_\_\_\_\_
- U) Are there feeding and swallowing (dysphagia) support material at your school? (i.e., reference books; parental instructional sheets; diet modification supplies; alternative

feeding utensils) **Y or N** If yes, provide

examples\_\_\_\_\_

V) Please rate the level of administrative support you have for providing feeding and swallowing (dysphagia) management at your school?

**Least Most**

• 1 2 3 4 5

W) What type of administrative support **“are you”** receiving, if any, to provide feeding and swallowing (dysphagia) management at your school?

\_\_\_\_\_

X) What type of administrative support **“are you not”** receiving, if any, to provide feeding and swallowing (dysphagia) management at your school?

\_\_\_\_\_

**Part 2 :**

A) First, place a **“Y”** for “yes” or **“N”** for “no” next to each of the below seventeen feeding and swallowing (dysphagia) responsibilities to indicate which ones you **“do” or “do not”** participate in at the public school you work at.

B) Then, for all seventeen dysphagia responsibilities below, regardless of whether you indicated a **“Y” or a “N”, please** rate your level of confidence on a scale of 1-5 with a “1” representing **“least confident” (no confidence-I do not feel comfortable at all with this task)** and an “5” representing **“most confident” (extremely confident-I feel I can perform this task with the greatest degree of skill)**.

**Least Confident**

**1**

**2**

**3**

**4**

**Most Confident**

**5**

1 \_\_\_\_\_ Assessment of oral-motor structure and function for eating

**Least Confident**

**1**

**2**

**3**

**4**

**Most Confident**

**5**

2 \_\_\_\_\_ Performing a feeding and swallowing (dysphagia) evaluation

**Least Confident**

**1**

**2**

**3**

**4**

**Most Confident**

**5**

3 \_\_\_\_\_ Identifying a normal swallow versus an abnormal swallow

<b>Least Confident</b>				<b>Most Confident</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

4 \_\_\_\_\_ Recognizing signs and symptoms of choking

<b>Least Confident</b>				<b>Most Confident</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

5 \_\_\_\_\_ Recognizing signs and symptoms of aspiration (when food or liquid enters the lungs)

<b>Least Confident</b>				<b>Most Confident</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

6 \_\_\_\_\_ Diagnosis of a feeding or swallowing (dysphagia) disorder

<b>Least Confident</b>				<b>Most Confident</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

7 \_\_\_\_\_ Providing recommendations for an appropriate diet or modifying a diet (i.e. selecting food textures and types based on eating and swallowing abilities)

<b>Least Confident</b>				<b>Most Confident</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

8 \_\_\_\_\_ Fostering nutritional status (i.e. determining healthy foods and amount of intake to promote health, brain development and concentration needed for classroom learning)

<b>Least Confident</b>				<b>Most Confident</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

9 \_\_\_\_\_ Assisting the student with safe eating and swallowing (i.e. size of bolus, pacing, clearing the oral cavity, monitoring for choking and aspiration)

<b>Least Confident</b>				<b>Most Confident</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>

10 \_\_\_\_\_ Determining if it is educationally relevant to provide feeding and swallowing (dysphagia) services (i.e. needed to maintain safe eating and swallowing during the school day, promote timely and safe participation in social mealtime experiences)

<i>Least Confident</i>				<i>Most Confident</i>
1	2	3	4	5
11 _____	Providing feeding and swallowing (dysphagia) treatment services			
<i>Least Confident</i>				<i>Most Confident</i>
1	2	3	4	5
12 _____	Engaging in feeding and swallowing (dysphagia) team collaboration with school nurses and school staff (i.e. teachers, classroom aides, physical therapists, occupational therapists)			
<i>Least Confident</i>				<i>Most Confident</i>
1	2	3	4	5
13 _____	Engaging in feeding and swallowing (dysphagia) team collaboration with medical professionals			
<i>Least Confident</i>				<i>Most Confident</i>
1	2	3	4	5
14 _____	Interpreting Modified Barium Swallow Studies (MBSS) and/or feeding and swallowing (dysphagia) reports from other professionals			
<i>Least Confident</i>				<i>Most Confident</i>
1	2	3	4	5
15 _____	Interpreting case history information (i.e. medical history) to determine impact on feeding and swallowing			
<i>Least Confident</i>				<i>Most Confident</i>
1	2	3	4	5
16 _____	Training caregivers and/or school staff members on managing feeding and swallowing			
<i>Least Confident</i>				<i>Most Confident</i>
1	2	3	4	5
17 _____	Making referrals for a medically-based swallowing (dysphagia) evaluation			

*Source: Survey Developed by Author*

## APPENDIX C

### INFORMED CONSENT FORM



Project Title: Dysphagia Management in the Public-School Setting: The Education & Training Needs of School Speech-Language Pathologists

#### **Researchers Affiliation:**

I am a doctoral student in the K-12 School Administration program Seton Hall University, seeking to investigate the self-confidence levels of public-school speech-language pathologists (SLP's) in providing dysphagia services for their students. Particularly, SLP's self-assurance across each of the clinical skill roles and responsibilities required for managing feeding and swallowing (dysphagia) in an educational setting.

#### **Purpose of the Research Study:**

The purpose of this descriptive study is to explore the above stated phenomenon by 1) identifying the roles and responsibilities of SLP's in feeding and swallowing (dysphagia) management in public schools across the nation, and collecting data on their perceived confidence levels for the roles and responsibilities they participate in and ones they do not 2) gathering information on background and knowledge and experience demographics and exploring potential relationships with perceived confidence levels across the dysphagia clinical skill competency areas. According to Merriam-Webster's Dictionary, "self-confidence" is defined as "confidence in oneself and in one's powers and abilities".

Results of this study will be used to confirm where further dysphagia training may be warranted, by gaining insight into the feeding and swallowing (dysphagia) clinical skill roles and responsibilities public school speech-language pathologists engage in and their level of confidence across each of the dysphagia management tasks. Dysphagia training can be defined as possessing the knowledge and experience to competently provide feeding and swallowing services in the public schools.

#### **Criteria to Qualify for Participation:**

You must be: 1) An ASHA certified SLP, 2) Member of ASHA SIG 1, 13 &/or 16, 3) Your primary place of employment is in the public schools 3) A public-school speech-language pathologists who **does have** students requiring feeding and swallowing (dysphagia) management on their caseload, E) A public school speech-language pathologists who **does not have** students requiring feeding and swallowing (dysphagia) management on their caseload.

#### **Voluntary Nature of Participation:**

Participation in this study is completely voluntary. If you do choose to be a subject, the requirement is to complete an online survey (Appendix B: Dysphagia Management in the Public School

Setting: The Education & Training Needs of School Speech-Language Pathologists), which includes providing background and professional experience demographic information, indicating your personal roles and responsibilities in feeding and swallowing (dysphagia) management in the school setting and rating your level of self-confidence across all outlined roles and responsibilities in public school-based dysphagia service provision.

For example, demographically you would be asked if you have any dysphagia experience prior to working in the public schools. For each of the dysphagia clinical roles and responsibilities, participants are asked to rate yes or no if they provide those services and then rate their self-confidence levels from “least” to “most confident” on a 5-point Likert scale. The survey takes approximately 5-10 minutes to complete.

**Anonymity & Confidentiality:**

*Findings will be published anonymously and presented as group data. Individual participant responses and names of study subjects will not be revealed to the public. Identity of subjects will not be recorded to maintain confidentiality and anonymity to both the researcher and community. All participant data will be kept on a USB drive and locked in a secure cabinet in a locked office at the University. This will only be accessible to the researcher and the research committee.*

**Risks:**

*There are no expected risks of participation in this survey study. Subjects will have the opportunity to consider and report on their experience with dysphagia, the roles they are involved in and how confident they are in performing each dysphagia clinical competency.*

**Contacts for the Research Study:**

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I (state name) agree to participate as a subject in this survey research

(Sign name here) (Date)

**\*\*\*Please save a copy of this Informed Consent form for your records.  
THANK YOU FOR YOUR PARTICIPATION IN THIS STUDY.**