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School-Based Speech-Language Pathologist's Perceptions of Sensory Food Aversions in Children

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by

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ABSTRACT

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Sensory Food Aversions occur frequently in children who are likely to appear on Speech-Language Pathologist's (SLP's) caseloads. The lack of research regarding intervention for Sensory Food Aversions in schools and the assertion of a gap in school-based services for children with feeding disorders was a significant indicator for the need of the study. A quantitative, descriptive, exploratory research design was selected using a self-developed questionnaire in order to explore school-based SLP's perceptions of their knowledge and skills related to Sensory Food Aversions, as well as determine resources available for working with this population. Findings from the study suggest a need for educational training, emphasize the advocacy role of an SLP, and shed light on the challenges/barriers SLPs face in regard to treating Sensory Food Aversions in schools. This study may be useful for SLPs in order to meet the needs of children with Sensory Food Aversions.

DEDICATION

This Master's Thesis is dedicated to children who are experiencing nutritional deficiencies as a result of Sensory Food Aversions. The hope of this research is to shed light on current school-based Speech-Language Pathologist's practices and provide insight toward improved service delivery and advocacy in order to address and meet the needs of children with Sensory Food Aversions.

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Chapter 1. Introduction

Avoidant/Restrictive Food Intake Disorder (ARFID) is defined as "an eating disorder resulting from avoidance or restriction of eating certain foods due to sensory sensitivities, lack of interest or low appetite, and/or following a traumatic experience with eating, such as choking, vomiting, or forms of gastroenterological distress" (American Psychiatric Association, 2013). These restrictions result in "significant medical or psychosocial problems that require independent clinical attention" (Thomas et al., 2017, p.2). Prior to the introduction of this term in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V), children with feeding concerns were diagnosed with "feeding disorders of infancy and childhood". As explained by Norris et al.(2016), the diagnostic term ARFID was developed in an attempt to capture a cohort of children who struggle with impaired and distressing behaviors and symptoms related to feeding, but who lack weight and body image-related concerns.

There is limited research on the prevalence of ARFID, however it is estimated that 25% of typical developing kids present with feeding difficulties (Kerzner et al., 2015), while approximately 80-90% of children with developmental disabilities (Davis et al., 2010; Kleinert, 2017; Rawool, 2017), and an estimated 90% of children with Autism Spectrum Disorder (ASD) present with feeding difficulties (Sharp et al., 2014). ARFID is a growing concern due to increased survival rates of low-birth weight and premature infants as a result of medical advances. Babies born prematurely or with low-birth weight are more likely to experience difficulties with feeding as a result of the numerous neuromotor and neurophysiological functions that can be impaired (Rawool, 2017; Lau, 2016). Kerzner et al. (2015) describe three manifestations of ARFID in an attempt to categorize and facilitate proper assessment and intervention. These categories include children with unpredictable-food refusal, fear-based food refusal, and selective-food refusal.

This research focuses on children who present with selective-food refusal, or Sensory Food Aversions, which occurs frequently in children with developmental delay and ASD who are likely to appear on Speech-Language Pathologist's (SLP's) caseloads. Sensory Food Aversions are defined as refusal to eat certain foods due to their relation to taste, texture, temperature, smell, and/or appearance (Chatoor, 2009). These aversions occur along a spectrum of severity, meaning one child may limit foods to only those with a crunchy texture, while another child may eat a variety of textures but avoid certain smells (Chatoor & Ganiban, 2003). Sensory Food Aversions can occur in children with and without ASD, though it is significantly more prevalent in the ASD population (Hubbard et al., 2014; Seiverling et al., 2018). A child with Sensory Food Aversions often presents with concurrent sensory-processing difficulties (Chistol et al., 2018).

Children with Sensory Food Aversions may experience nutritional deficiencies, particularly in vitamins and mineral components (Ciborska et al., 2018). As expected, "a child's brain is highly dependent on the vitamins, minerals, amino acids, essential fatty acids, and calories found in food" (Strickland, 2009, p.1). If a child is not getting enough key nutrients, it may compromise their brain development and function, detoxification processes, gastrointestinal (GI) health, immune system function, and erythropoiesis, or the production of red blood cells (Strickland, 2009). Nutritional deficiencies have a negative impact on academic performance and a child's ability to concentrate during the school day (Bryant-Waugh et al., 2010). It has also been found that children with feeding disorders miss a greater number of school days and therapy sessions due to their immune systems' impairment to fight off illnesses (Black & Zablotsky, 2018; Strickland, 2009).

There is evidence to suggest that children with Sensory Food Aversions may benefit from receiving treatment in the schools (Boggs & Ferguson, 2016; Cermak et al., 2010; Chatoor & Ganiban, 2003; Kerzner et al., 2015; Twachtman-Reilly et al., 2008). It is also suggested that exposing children with Sensory Food Aversions to non-food sensory (e.g., Play-Doh shaving cream, feathers, water play) and food sensory activities (e.g., prepping vegetables, food sensory bins, squishing fruits) can decrease anxiety related to sensory processing and in turn expand their food inventory (Boggs & Ferguson, 2016; Potock, 2017; Twachtman-Reilly et al., 2008). These non-food and food sensory activities could be easily imbedded in a variety of school-based activities while providing services.

Although research is available on the importance of nutrition and academic development, there is little research to show the prevalence of feeding services for Sensory Food Aversions within the schools, as well as little research to show the prevalence of sensory-based feeding clinics in the United States. It is reasonable to assume families, particularly those who attend school in rural locations, may have limited access to sensory-based feeding clinics. This stresses the importance of considering the potential need to have school-based feeding intervention for children.

Rationale of Study

As a Speech Language Pathologist – Assistant (SLP-A) working in the school system, this researcher provided clinical services to children with speech and language disorders. However, services for children with feeding disorders was not provided. Following a graduate clinical placement in the Positive Eating Program at East Tennessee State University, this researcher gained experience in feeding intervention for children with ARFID. Learning about the nutritional deficiencies, sensory challenges, and family stress in children with ARFID led this

researcher to question ARFIDs potential impact on academic development and consider children on this researcher's previous caseload who could have potentially benefited from sensory-based feeding services in the school. It was the experience as an SLP-A and new graduate clinician that led to the assertion that there is a gap in school-based services meeting the needs of children with feeding disorder. The lack of research on the topic of intervention for ARFID and Sensory Food Aversions in the schools was a significant indicator of the need for such a study.

Purpose of the Study

The purpose of the study was to explore school-based SLP's perceptions of their knowledge and skills related to Sensory Food Aversions, as well as determine what resources are available for the assessment and treatment of children with Sensory Food Aversions. The review of the literature presents information on nutritional deficiencies as a consequence of Sensory Food Aversions and the potential impact of nutritional deficiencies on academic development, in addition to evidence for the necessity and benefits of incorporating sensory-based feeding services in the schools.

Research Questions:

1. What self-perceived knowledge do Speech-Language Pathologists in the schools have about Sensory Food Aversions in children?
2. What self-perceived skills do Speech-Language Pathologists in the schools have to provide intervention for Sensory Food Aversions in children?
3. What self-perceived knowledge do Speech-Language Pathologists in the schools have about the effects of nutritional deficiencies on academic performance?
4. Do Speech-Language Pathologists in the schools have access to resources in the community to meet the needs of children with Sensory Food Aversions?

Significance of the Study

As far as could be determined, no research was available regarding SLP's perceived level of knowledge, skills, and access to resources in the schools related to Sensory Food Aversions. The results of this study will benefit children and families of children with Sensory Food Aversions, as well as SLPs who work with children with Sensory Food Aversions. The study aims to shed light on SLP's knowledge of Sensory Food Aversions and nutritional deficiencies, skills and current practices related to feeding intervention, and potential interest in understanding and treating feeding disorders in the schools.

Definitions of Terms:

Autism Spectrum Disorder (ASD): a developmental disability characterized by deficits in communication, social interaction, and restrictive, repetitive behavioral patterns that impair social, occupational, and daily functioning (American Psychiatric Association, 2013).

Attention Deficit Hyperactivity Disorder (ADHD): a neurodevelopmental disorder which results in difficulty paying attention, controlling impulsive behaviors, and over-activity (Centers for Disease Control, 2019).

Avoidant/Restrictive Food Intake Disorder (ARFID): an eating disorder resulting from avoidance or restriction of eating certain foods due to sensory sensitivities, lack of interest or low appetite, and/or following a traumatic experience with eating, such as choking, vomiting, or forms of gastroenterological distress (American Psychiatric Association, 2013).

Central Nervous System (CNS): The part of the nervous system consisting of the brain and spinal cord. Along with the peripheral nervous system, it plays a major role in the control of behavior (Strickland, 2009, p.244).

Chronic Absenteeism: missing fifteen or more days of school during an academic school-year (Black & Zablotsky, 2018).

Developmental Disabilities: A severe, chronic disability of an individual that is attributable to a mental or physical impairment or combination of mental and physical impairments (Kleinert, 2017).

Diagnostic Statistical Manual of Mental Disorders- Fifth Edition (DSM-V): the handbook used by health care professionals in the United States and much of the world as the authoritative guide to the diagnosis of mental disorders (American Psychiatric Association, 2013).

Erythropoiesis: the process by which red blood cells are produced, usually in the bone marrow, important for transporting oxygen to the brain (Strickland, 2009).

Fear-based Food Refusal: children who appear fearful during feeding interactions and who consistently reject foods based upon texture (e.g., solids, liquids, or both) at all meals and in severe cases, refuse to eat at all. This type of food refusal usually emerges after episodes of choking or severe gagging (Chatoor & Ganiban, 2003).

Feeding difficulties: an umbrella term encompassing all feeding problems, regardless of etiology, severity, or consequences (Yang, 2017).

Feeding disorder: an inability or refusal to eat sufficient quantities or variety of food to maintain adequate nutritional status, leading to substantial consequences, including malnutrition, impaired growth, and possible neurocognitive dysfunction (Yang, 2017).

Food aversions: food sensitivities, sensory defensiveness, and food rejections which may occur as a result of a variety of situations and conditions such as underlying gastric issues,

sensory integration processing disorders, lack of exposure or experience, behavioral, or psychological reasons (Kleinert, 2017).

Food neophobia: the rejection of foods that are novel or unknown to the child (Kerzner et al., 2015).

Myelin Sheath: The fatty layer of insulation surrounding the axons of neurons increasing the speed at which electrical impulses can travel from neuron to neuron (Strickland, 2009).

Peripheral Nervous System: The nerves connecting the central nervous system to the limbs and organs (Strickland, 2009, p.249).

Picky eating: A term that has inconsistent definitions and meanings in different countries. Various criteria for picky eating are used by different authors and in some cultures include "fussy" children with poor appetite. Others view it as a mild form of more overt sensory disturbances. It generally connotes a mild or transient problem. Although it is not considered a "medical condition", it requires the attention of the primary care provider (Kerzner et al., 2015).

Selective-food refusal: Children who consistently refuse to eat foods with specific tastes, odors, or textures; also referred to as Sensory Food Aversions (Chatoor & Ganiban, 2003).

Sensory Food Aversions: refusal to eat certain foods due to their relation to taste, texture, temperature, smell, and/or appearance. These are often associated with sensory-processing difficulties and can be referred to as selective-food refusal (Chatoor, 2009; Chistol et al., 2018).

Sensory Processing: the ability to register, process, and organize sensory information and to execute appropriate responses to environmental demands, which may manifest as over- or -under sensitivity to the stimuli (Chistol et al., 2018, p. 2).

Unpredictable Food Refusal: children who are extremely inconsistent in their food preferences and in their daily caloric intake (Chatooor & Ganiban, 2003).

Summary

Chapter one provided the statement of the problem, the purpose of the study, research questions, significance of the study, definition of terms, and a brief overview to the layout of the research. Chapter two provides the literature review and includes discussion on the topics of ARFID, Sensory Food Aversions, the nutritional and developmental impact of Sensory Food Aversions, and the implementation of intervention for Sensory Food Aversions.

Chapter 2. Literature Review

This chapter will address the current literature on ARFID and describe behavioral and sensory factors present in children with feeding disorders. The literature review will focus on sensory-based food aversions, the nutritional impact of feeding disorders, the academic impact of nutritional deficiencies, and the availability of treatment service. The chapter will conclude with a description of sensory-based feeding intervention and its potential use in the schools.

ARFID

Norris et al. (2016) indicate that ARFID occurs when individuals display restrictive or avoidant eating behaviors that result in significant decrease in weight, compromised growth, nutritional deficiency, reliance on nutritional supplements to meet daily needs, or interference with psychosocial functioning. Children with ARFID may also have impairments in cognition, emotional development, and may require recurrent hospitalizations due to compromised immune function (Sharp et al., 2017). Multiple factors contribute to feeding that makes treating feeding disorders complex, as these factors are often intertwined (Boggs & Ferguson, 2016). These factors may include physiological impairments, underlying gastric issues, lack of exposure or experience, psychological, behavioral, and/or sensory integration processing disorders (Kleinert, 2017).

Even when underlying medical issues are resolved, children can still experience behavioral and sensory aversions due to negative experiences with eating (Kleiner, 2017). The complex presentation of symptoms makes it difficult to determine whether sensory deficits result in behavioral responses or whether behavioral responses are learned over time (Boggs & Ferguson, 2016). Regardless of their origin, behavioral factors can adversely affect mealtimes and feeding (Goday et al., 2019). Examples of challenging behaviors that may affect mealtimes

include refusal to sit at the table, refusal to self-feed, throwing food, crying or screaming when presented with non-preferred foods, or vomiting to avoid meals (Boggs & Ferguson, 2016). Twachtman- Reilly et al. (2008) discuss neurologically based characteristics that influence behavioral feeding challenges, including repetitive behaviors, executive functioning skills, fear and/or anxiety, and decreased communication. Children who seek repetitive or ritualistic behaviors may require food to be prepared in a specific manner, consume only foods based on certain color, texture, taste, or smell, and/or demand specific routines during mealtimes. Additionally, a child with decreased executive functioning may have difficulties coordinating complex tasks associate with eating such as preparing meals, meal consumption, and cleaning up following mealtime (Boggs & Ferguson, 2016). Children with fear and/or anxiety and communication impairments may present with challenging behaviors as a result of limited abilities to process and/or communicate their discomforts related to feeding (Boggs & Ferguson, 2016). Regardless of etiology and manifestation, behavioral factors and sensory factors associated with ARFID are often intertwined.

Kerzner et al. (2015) divide ARFID into three manifestations, including children with unpredictable-food refusal, fear-based food refusal, and selective-food refusal. It is important to identify the type of refusal a child has prior to determining intervention strategies. Although this research focuses specifically on selective-food refusal, also known as Sensory Food Aversions, it is important to understand unpredictable-food refusal and fear-based food refusal due to their ability to occur simultaneously and to improve intervention outcomes.

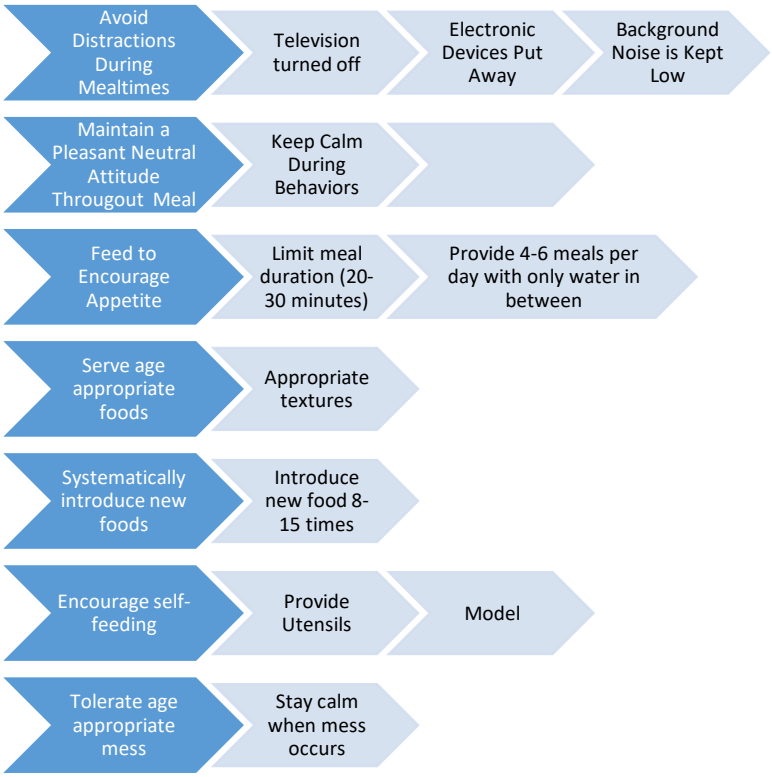
Unpredictable-food refusal, also referred to as limited appetite or infantile anorexia, is associated with low weight, food refusal not caused by a traumatic event or underlying medical illness, growth deficiency, and inconsistency in food preferences and caloric intake (Kerzner et

al., 2015; Chatoor & Ganiban, 2003). Intervention for children with unpredictable-food refusal includes parent training and emphasizing education on the difference between feeling hungry and feeling full (Kerzner et al., 2015).

Fear-based refusal, also known as food neophobia, is central to a posttraumatic feeding event. Fear of feeding may arrive after an event such as choking, severe gagging, or vomiting (Chatoor & Ganiban, 2003). Kerzner et al. (2015) suggest three distinct patterns that are discernable as a result of a traumatic feeding event. These include "fear of feeding after a single event, notably choking; fear of feeding in the young child who has been subjected to painful or unpleasant oral procedures; and fear of feeding in children who are tube-fed or have missed feeding milestones, lack experience, and/or feel threatened when food is introduced orally" (Kerzner et al., 2015, p. 349). The primary goal when it comes to intervention for fear-based food refusal is to decrease anxiety associated with eating. Table 1 represents parent feeding guidelines explained by Kerzner et al. (2015) for children with unpredictable-food refusal and fear-based food refusal.

Table 1.

Feeding Guidelines for Children with Unpredictable-Food Refusal and Fear-Based Refusal (Kerzner et al., 2015)



The guidelines above support children with unpredictable and fear-based food refusal. While these strategies may also support the treatment of Sensory Food Aversions, children with Sensory Food Aversions require integration of both sensory-based and behavioral-based strategies. This research focuses specifically on Sensory Food Aversions due to their complexity in requiring multiple treatment components.

Sensory Food Aversions

Sensory Food Aversions are defined as refusal to eat certain foods due to their relation to taste, texture, temperature, smell, and/or appearance (Chatoor, 2009). Sensory Food Aversions are often associated with sensory-processing difficulties (Chistol et al., 2018). "Sensory processing refers to the ability to register, process, and organize sensory information and to execute appropriate responses to environmental demands, which may manifest as over- or under-sensitivity to the stimuli" (Chistol et al., 2018, p. 2). Therefore, children with sensory-processing challenges often have difficulties discriminating relevant input from irrelevant input, particularly in coping with the task at hand and developmental demands. This information can trigger a fight or flight response within the sympathetic nervous system, leading to the strong reactions to stimuli (Boggs & Ferguson, 2016).

These sensory-processing difficulties can manifest as hypersensitivity, hyposensitivity, and/or fluctuating responsivity (Twachtman-Reilly et al., 2008). Hypersensitivity, or sensory overload, is a term used to describe children who receive too much information from their senses, resulting in avoidance behaviors. Hyposensitivity, or sensory seeking, is a term used to describe children who receive too little information from their senses, resulting in difficulty making sense of the information around them and increased seeking of sensory input (Twachtman-Reilly et al., 2008). Table 2 describes potential effects of sensory stimulation during mealtimes in each of the seven sensory systems.

Table 2.

Possible Effects of Sensory Integration Difficulties on Feeding (Twachtman-Reilly et al., 2008)

System	Hypersensitivity	Hyposensitivity
Auditory	Overly sensitive to sound in the mealtime environment (e.g., covers ears, anxious, aggression, cry, yell, withdrawn, distracted)	Unaware of sounds in the mealtime environment (e.g., daydreaming, lengthy mealtimes)
Gustatory	Overly sensitive to a variety of tastes (e.g., picky eater, prefer bland flavors, food refusals, gagging)	Poor discrimination between tastes (e.g., crave strong flavors such as sour or spicy, lick or taste inedible objects)
Olfactory	Overly sensitive to odors in the mealtime environment (e.g., sensitive to smells in the kitchen)	Unaware of strong odors in mealtime environment (e.g., disinterested in eating without the enhancement of smell)
Proprioceptive	Poor body awareness (e.g., messiness, poor gradation of jaw and hand to mouth movements)	Poor body awareness (e.g., messiness, poor gradation of jaw and hand to mouth movements)
Tactile	Overly sensitive to tactile input to the skin and/or oral areas (e.g., dislike touching foods or touching food around mouth)	Unaware of touch and differences in food textures (e.g., unaware of messiness around mouth, over-stuffing or pocketing, mouthing in-edibles)
Vestibular	Overly sensitive to movement or change in head position (e.g., poor coordination for utensil use, fearful in unsupported seating)	Seeks high levels of movement input (e.g., poor posture, high activity level, fidgety)
Visual	Overly sensitive to light and movement in the mealtime environment (e.g., shields eyes, squints, avert gaze, withdrawn, anxious)	Unaware of relevant or changing input in the environment (e.g., over focused on irrelevant visual features of the food or plate, inattentive to complete meal)

In addition to the systems listed in Table 2, the Interoceptive System, also known as the Eighth Sense, may contribute to the presence of Sensory Food Aversions. The Interoceptive System plays a role in the ability to feel what is happening inside of our bodies (Mahler, 2017). Receptors within the organs and muscles throughout the body receive information and send it to the brain. When these receptors are working properly, they result in the ability to feel reactions such as hunger, fatigue, pain, the need to use the restroom, and nausea (Mahler, 2017).

Therefore, a child with sensory-integration difficulties may have difficulties recognizing these feelings throughout the body. If a child has difficulty feeling hungry, this may significantly impact mealtimes and result in difficult mealtime behaviors.

Given the challenges on feeding associated with sensory integration, many children with Sensory Food Aversions will also refuse substitutions for the foods they tolerate based on subtle differences in their smell, taste, or appearance, although these differences in features may not be discernable to most people (Bryan-Waugh et al., 2010). A typical diet of a child with Sensory Food Aversions may consist of foods that are a certain color (e.g. white or bland colored foods such as bread, crackers, or plain pasta), texture (e.g. pureed baby food or only crunchy foods), taste (e.g. salty food or bland foods), appearance (e.g. will only eat a certain brand), and smell (e.g. foods that do not have a strong smell, difficulty at a restaurant).

Selectivity ranges in severity from mildly to highly selective (Kerzner et al., 2015). Mild selectivity includes a group of children often referred to as "picky eaters" who consume fewer foods compared to the average intake of children. Nutrition deficiency is less of a concern for a picky eater, therefore they may not qualify for an ARFID or Feeding Disorder diagnosis. Parents/caregivers of picky eaters' primary concern is the stress and anxiety related to mealtime routines and behaviors. On the other hand, children exhibiting severe selectivity often present with nutritional deficiencies resulting in consideration for an ARFID or Feeding Disorder diagnosis. Children with severe selectivity consume a diet of less than ten to fifteen foods, commonly associated with a disruption in development of oral motor skills, early feeding skills, and nutritional concerns (Kerzner et al., 2015).

Nutrition

Nutrition is defined as the process of providing or obtaining the food necessary for health and growth. Poor nutrition is a concern for children who present with feeding disorders, as an estimated 25% to 50% of children with feeding disorders are considered malnourished (Goday et al., 2019). Malnutrition is defined as "intake of nutrients insufficient to meet nutritional requirements, resulting in cumulative deficits of energy, protein, or micronutrients that may adversely impact growth, development, and health" (Goday et al., 2019, p. 126). Food aversions may result in nutritional deficiencies, particularly in vitamins and mineral components (Cirborska et al., 2018).

A child's brain is highly dependent on the micro- and macronutrients found in food, including vitamins, minerals, amino acids, essential fatty acids, and calories (Schwarzenberg & Georgieff, 2018; Strickland, 2009). According to Groce et al. (2014), micro- and macronutrient deficiencies are risk factors for physical, sensory, and cognitive impairment. Furthermore, if a child is not getting enough of these key micro- and macronutrients, it compromises their brain development and function, gastrointestinal (GI) health, immune system function, and erythropoiesis, or the production of red blood cells (Strickland, 2009). Children with ARFID often present with food jags, known as "consuming a single food or foods for extended periods of time" (Butte et al., 2004, p.444), which are often carbohydrate-rich (Cermak, 2013). Therefore, it is difficult to determine whether the food or foods they are consuming contain the variety of vitamins and minerals necessary to support proper nutrition. Diagnostic criteria for ARFID includes nutritional deficiencies and poor growth, therefore one or more of these systems is likely compromised in this population of children.

Brain development and function. In terms of brain development and function, neurotransmitter production, the synthesis of the brain's myelin sheath, glucose oxidation, and visual and cognitive processing are compromised when the brain is not getting enough nutrients. The body is designed to consume a variety of foods to meet these needs (Nyaradi et al., 2013; Strickland, 2009). The first 1,000 days of life, or from birth through the second year of life, is a critical time period in neurological development (Bourke et al., 2016; Schwarzenberg & Georgieff, 2018). Important structures and functions are formed during this time period, some of which include the sensory systems, the hippocampus (e.g., crucial for learning and memory), and the prefrontal cortex which is important for planning, attention, and multitasking (Schwarzenberg & Georgieff, 2018). Therefore, ample nutrition in this particular stage of life is crucial for neurodevelopment and lifelong cognitive processing.

Cognitive processing, including attention, memory, thinking, learning, and perception are vital to development and a child's ability to excel in school. When cognitive processing is compromised due to poor or malnutrition, children are more likely to have deficits in social competence, behavioral regulation, visuomotor coordination, language, and poor immediate memory (Kar et al., 2008). Nyaradi et al. (2013, p. 10) describe that even mild malnutrition during early years of life, if persistent, negatively influences "reasoning, visuospatial functions, IQ, language development, attention, learning, and learning, while supplementation with food can improve cognitive performance".

Gastrointestinal health. Abnormalities in GI function due to malnutrition may result in malabsorption, maldigestion, pancreatic dysfunction, and protein losing enteropathy (PLE) (He et al., 2009). Malabsorption is known as the inability to absorb nutrients from consumed foods, such as vitamins, minerals, fats, proteins, and carbohydrates (Hackert et al., 2014). Pancreatic

dysfunction occurs when the pancreas does not produce enough enzymes to process food, resulting in maldigestion, or the inability of the intestines to adequately break down food (Hackert et al., 2014). PLE is the abnormally rapid loss of necessary proteins the GI tract needs to function properly (Levitt & Levitt, 2017). Typical GI health is dependent on a constant supply of vitamins and minerals, as well as the amino acid glutamine. The lack of these vitamins and minerals can harm cellular growth in the GI tract, which may compromise its ability to absorb nutrients (Bourke et al., 2016; Strickland, 2009). Therefore, poor absorption and retention of nutrients due to insufficient GI function further contributes to nutritional deficiencies in these children, as their body may not be able to retain the nutrients in the few foods that they are consuming.

Immune system function. The immune system is responsible for protecting the body against disease. Immune System function is dependent on vitamins and minerals such as vitamin C, vitamin Z, vitamin E, vitamin D, B vitamins, iron, selenium, zinc, and bioflavonoids to function at its optimum level (Bourke et al., 2016; Strickland, 2009). A poor or limited diet can put a child at risk for immune system malfunction when it is not receiving the necessary nutrients to function properly. A child with a compromised immune system is at greater risk for developing "allergies, frequent ear infections, acute and chronic illnesses, and upper respiratory infections" (Strickland, 2009, p. 2). The first 1,000 days of life are also a critical time period for immune system development (Bourke et al., 2016; Schwarzenberg & Georgieff, 2018). Early life malnutrition during this time may result in lifelong insufficient immune support (Bourke et al., 2016). According to Rytter et al. (2014), a child who is malnourished will have a difficult time maintaining a healthy immune system, therefore increasing their susceptibility to illness, while a child who is battling an illness will have a difficult time staying nourished as they have a

decreased appetite and increased demand for nutrients.

Erythropoiesis. Erythropoiesis, the development of red blood cells that carry oxygen to the brain (Elliot et al., 2008), is supported by iron, vitamin B6, copper, folate, vitamin B12, vitamin C, and vitamin E (Strickland, 2009). Insufficient erythropoiesis may result in anemia, which is a lack of red blood cells in the blood (Gupta et al., 2018). Nutritional deficiency anemia is associated with "irritability, headaches, loss of appetite, lethargy, hyperactivity, inattentiveness, and poor school performance" (Strickland, 2009, p. 2). Iron-Deficiency Anemia (IDA) is the most prevalent nutrient deficiency in the United States and children who are preterm or low-birthweight are at higher risk (Lundblad et al., 2015). As discussed by Lundblad et al. (2015, p.1), IDA may impact "neurological development, cognitive function, exercise tolerance, immune function, and school performance".

Research suggests that ample nutrition comes from consuming a variety of foods from different food groups (Cooke, 2007; Falciglia et al., 2000; Nicklaus, 2009). According to Falciglia et al. (2000, p. 1474) "choosing a variety of foods across and within food groups is thought to improve eating patterns by increasing exposure to a wider range of essential nutrients and other dietary components". However, children with ARFID consume a narrow variety of foods, often including starches, snack foods, and processed foods (Brigham et al., 2018; McElhanon et al., 2014). Their lack of variety of foods may therefore cause nutritional deficiencies in specific micro- and macronutrients. These deficiencies not only negatively impact their life and health, but how they do in school as well.

Impact of Nutritional Deficiencies on Academic Development

A child who is continually fighting off illnesses due to nutritional deficiencies affecting their health will miss a greater number of school days and therapy sessions (Strickland,

2009). According to a study by Black and Zablotsky (2018), children with developmental disabilities, specifically children with Attention Deficit Hyperactivity Disorder (ADHD), ASD, and intellectual disability, are significantly more likely to have chronic absenteeism compared to children without these conditions. Chronic absenteeism, defined as missing ten percent or more days of school per year, is associated with "poor academic performance, poor school engagement, and greater school dropout" (Black & Zablotsky, 2018, p.1). Furthermore, children with food aversions are more likely to have increased anxiety, obsessive-compulsive symptoms, frequent social difficulties, and difficulties at school. Their malnutrition may lead to difficulties concentrating and extreme lethargy during the school day (Bryant-Waugh et al., 2010).

Sensory Food Aversions may also impact a child's pragmatic skills and social environment in the cafeteria, specifically if they are hypersensitive to the sensory aspects associated with the school lunchroom. The lunchroom environment requires various sensory experiences such as the smell of food cooking, flickering fluorescent lights, students and staff moving throughout the room, and the sound of students and staff chatting. According to Twachtman-Reilly et al. (2008), behavioral responses to this experience may include fight (e.g., screaming or becoming aggressive), flight (e.g., fleeing from the environment), or fright (e.g., shutting down and not be able to eat or socialize with peers). For children with ARFID the anxiety related to lunch time at school may adversely impact their ability to socialize with peers and participate in mealtime. Children may ask them why they are not eating or why they consistently bring the same foods in the lunch they pack. This may result in embarrassment or increased anxiety related to feeding.

Nyaradi et al. (2013) describe the importance of education in regard to long term health and lifestyle, arguing that if academic achievement is important for personal health, it should therefore be a concern for public health. “Schooling builds human skills, abilities, and resources, which ultimately shapes health and well-being. More education has been linked to better jobs, higher income, higher socio-economic status, better health care access and housing, better lifestyle, nutrition, and physical activity which are all well-known health determinants” (Nyaradi et al., 2013, p.1). Education increases an individual’s sense of personal control and self-esteem, which have also been shown to influence better health. Therefore, children with Sensory Food Aversions should receive the services necessary to be nutritionally fit to focus and excel in their academics.

Feeding Clinics and Teams

Feeding clinics. As far as could be determined, there is no research specifically on the prevalence of medical-based feeding clinics across the United States, though it is expected feeding clinics are more prevalent in urban areas with access to larger hospitals and private feeding clinics. Limited access to community-based feeding clinics may be problematic in communities where feeding services are not offered at school. Such limitations may include accessibility to a community-based feeding clinic within a reasonable distance of travel, lack of collaboration between a school-based SLP and community-based feeding clinic, and lack of knowledge related to services offered at a community-based feeding clinic. However, if feeding intervention is provided in a school system, the team approach and collaboration between the team and community-based clinic is best preferred (Homer, 2009).

Feeding teams. Due to the complexities of feeding disorders and their association with various medical conditions, a multidisciplinary team approach is preferred in order to

comprehensively evaluate and treat children with feeding disorders (Jung et al., 2016). According to the American Speech-Language Hearing Association (ASHA) Guidelines on Pediatric Dysphagia, "the diagnosis and treatment of swallowing and feeding disorders in the schools requires both a school-based team and a medical-based team, which must work together to establish safe feeding for the student" (Homer, 2009, p. 81). Based on a systematic review and meta-analysis of intensive multidisciplinary intervention for pediatric feeding disorders, Sharp et al., (2017) suggest a medical based-pediatric feeding team should be comprised of an SLP, pediatrician or physician, nurse, nutritionist, occupational therapist, psychologist, and/or behavioral analyst.

In a school setting, a feeding team is typically comprised of the SLP, nurse, classroom teacher, classroom assistant, school administrator, occupational therapist, physical therapist, cafeteria manager, social worker, and the parents/caregiver (Homer, 2009). Members of the team are suggested to meet throughout the year "to develop policies and procedures, identify children, set up screening and assessments, and provide direct-wide training" (D'Angelo, 2018, p. 31). Team training and education is required in order to meet the child's feeding challenges, needs, and to develop a plan (D'Angelo, 2018). In terms of children with Sensory Food Aversions, expanding their food inventory, providing sensory-integration activities, and increasing food and sensory awareness in order to address nutritional deficiencies are the primary goal when addressing feeding concerns as a team.

Providing Intervention for Sensory Food Aversions

The *Pediatric Dysphagia Practice Portal* (2014) indicated that SLPs play a central role in the diagnosis, assessment, planning, treatment, prevention and advocacy, and education when working with children with ARFID. "School systems throughout the country are now challenged

to address feeding and swallowing as part of their education plan" (Homer & Faust, 2017, p. 57. Homer and Faust (2017, p. 57) argue that "by realizing their professional responsibility and understanding the legal justification for providing services in the school setting, the SLP can advocate effectively for these services". Arvedson and Homer (2006) provide information for determining eligibility of services and how to implement feeding services in a school corporation that does not have guidelines in place through the *Pediatric Dysphagia Practice Portal* (2014). Such guidelines are described in Table 3 from and Homer (2008).

Table 3.

Suggested Components for Members of an Interdisciplinary Team Procedure in the Schools (Homer, 2008, p.182)

Suggested Component	Definition	Purpose
1. Student referral to the feeding team	Procedure and related forms for referring a student to the dysphagia specialist or team for evaluation or other attention	To allow parents/guardians, teachers, SLPs, and other school personnel to easily refer a student to the dysphagia team
2. Assignment of a case manager	Person designated to coordinate implementation of the dysphagia team procedure; requires knowledge and skills in the evaluation, and treatment of dysphagia	To take responsibility for ensuring that the procedure is followed and documented; to keep team members informed
3.Communication with parents/guardians	Methods for contacting parents/guardians including phone conferencing, forms for gathering information and direct contact at school	To involve parents/guardians from the beginning of the procedure as part of the problem-solving team
4. Screening and clinical evaluation	Procedure and related forms for determining the presence of dysphagia, the extent of involvement, and its effect on the student	To determine if a student should be followed by the dysphagia team; to identify the student's physical and sensory–motor issues
5. Individual education plan	Special education plan involving essential team members that documents student's academic, social, communication, self-help, and motor programs, including dysphagia	To outline a plan for addressing the student's swallowing and feeding concerns

6. Swallowing and feeding plan and training	Plan written by dysphagia team members that provides information on each of the components necessary to feed a student safely at school	To ensure that classroom personnel and parents/ guardians know how to feed the student safely and effectively
7. Individualized health plan and training	Written by the nurse when a student has health issues that need to be addressed during school hours	To outline steps for classroom personnel to follow when a student chokes at school; requires training of all personnel
8. Referral for instrumental evaluation (if appropriate)	Procedure and related forms for referring a student for an instrumental evaluation to determine oral and pharyngeal phase involvement and response to strategies	To secure physician orders, set up the evaluation, communicate with the hospital staff, and receive the report
9.Implementation of the feeding plan	Process of ensuring that the swallowing and feeding plan is followed in the classroom	To work with classroom staff to ensure that they know the swallowing and feeding plan and are using it in the classroom; level of service is individualized and depends on the needs of each student; plan is modified as needed
11. Therapeutic treatment	Treatment program for each student's individual needs in relation to his or her swallowing and feeding skills	To increase swallowing competency, advance skills, and improve behaviors related to swallowing and feeding
12. Process for transferring and discharging students	Procedure and related forms for sharing information on a student's swallowing and feeding to move within a system, to other systems, or for the purpose of discharging the student	To inform other schools or systems of the student's swallowing and feeding status as well as to indicate that a student no longer needs to be followed by the team

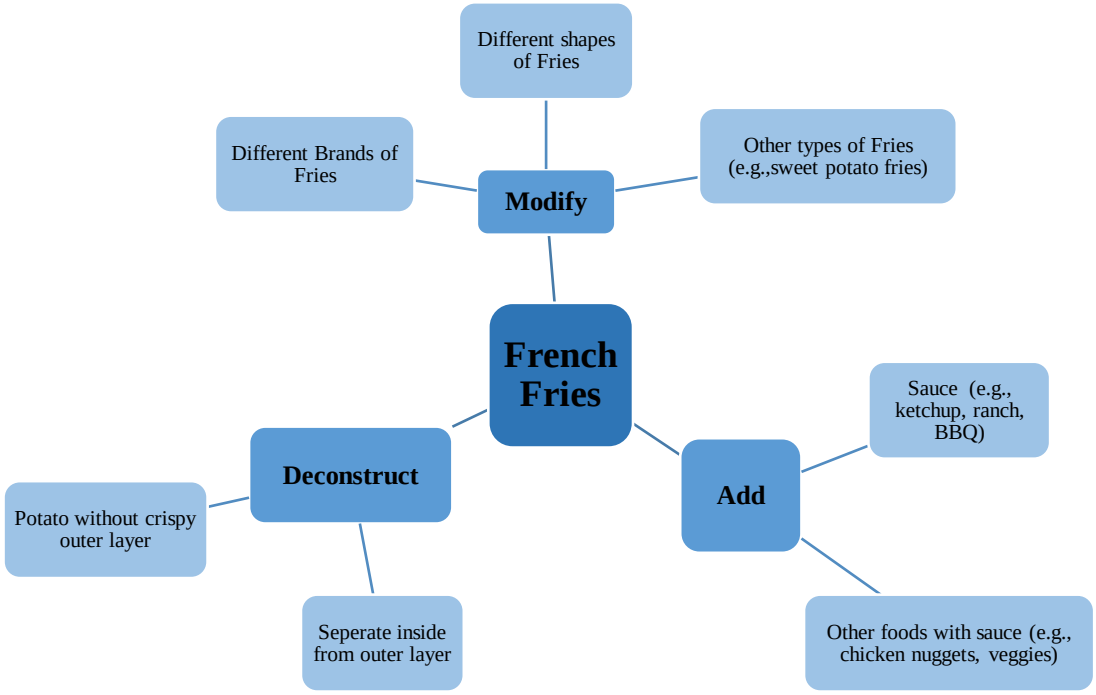
Table 3 describes the steps recommended when a child is referred for feeding/food aversion concerns. Similar to the process of a typical speech/language referral, the first step is to obtain permission from a parent/caregiver. Once consent for an evaluation is obtained, it is recommended to complete the evaluation with other members of the feeding team depending on the child's specific needs. During an evaluation it is particularly important to interview the child's parent/caregiver. A careful history of the child's eating habits, foods the child consumes across each of the five food groups (e.g., dairy, grains, protein, fruits, and vegetables), willingness to try new foods, medical factors that may attribute to feeding difficulties, parent/caregiver concerns, and the degree of severity of sensory-factors contributing to the feeding should be obtained.

Intervention approaches. Once the need for services are determined, there are a number of intervention approaches to treat Sensory Food Aversions that can be implemented depending on the needs of the child. Intervention from the SLP can be provided through various experiences with and without food (Kleinert, 2017). Four intervention approaches that target Sensory Food Aversions include food chaining, sensory integration, fading and shaping, and providing increased or decreased oral sensation.

Food Chaining. Food chaining is "the replacement of one food with a similar one" (Kerzner et al., 2015, pp. 348-349). Fraker and Walbert (2011) describe the goal of food chaining to expand food inventory by emphasizing similar features between accepted and novel food items. Food chaining focuses on decreasing anxiety toward new foods as they are offered in an intentional sequence based on the child's preferred foods and current level of feeding skills. The child is more likely to accept food items when they are presented in ways that connect them to foods they prefer. It is important for the clinician to be mindful of the child's taste, texture, and temperature preferences when presenting novel foods (Fraker & Walbert, 2011). Figure 1 below depicts an example of food chaining.

Figure 1.

Food Chain for a Child with a Preferred Food of French Fries



In the schools, food chaining can be implemented during lunch or with a snack and parent/caregiver training could be provided by the SLP. Through parent training the SLP could provide resources regarding food chaining and strategies to implement at home to generalize effectiveness of services.

***Sensory Integration*.** Providing sensory integration approaches, such as non-food and food sensory activities, can indirectly support a child's feeding needs (Boggs & Ferguson, 2016; Brigham et al., 2019; Cermak et al., 2010; Chatoor & Ganiban, 2003; Huston et al., 2019; Kerzner et al., 2015). The goal of sensory integration to target feeding therapy is to desensitize children to non-food and food activities in a positive environment. Example of non-food activities include things such as sensory bins, playdoh, leaves, feathers, water play, crafts with

glue. Examples of food-sensory activities include cutting vegetables, building a pizza, spreading peanut butter on food, or rice sensory bins. Table 4 is a sensory activity rubric created by Boggs and Ferguson (2016) in order to monitor a child's progress in sensory activities.

Table 4.

P*ositive Eating Program (PEP): Sensory Activity Rubric (Boggs & Ferguson, 2016, p.35)*

	Easy	**Easy/Moderate**	**Moderate**	**Moderate/Challenging**	**Challenging**
Texture	Hard texture	Less hard/mixed texture	Mixed texture	Mixed/soft texture	Soft texture
Number of Sensory Elements	One element (simple)	One-two elements	Two elements	Two-three elements	Multiple elements (complex)
Messiness & Smell	Clean/no particular smell	Clean/slightly messy; light smell	Alternating messiness	Alternating messiness/messy; more significant smell	Messy/smells
Sample Activities	• Preparing snack (passing out goldfish) • Tearing paper • Dry beans • Rice • Sensory Tubes	• Feathers • Glue Stick • Sensory bag • Sensory tub	• Preparing snack (cutting apples) • Putting on lotion • Cotton balls • Sand play • Playdoh • Glue stick with small objects	• Preparing snack (peeling oranges) • Water beads • Finger paint • Elmer's glue • Water play/sponges • Cloud dough	• Messy food play • Shaving cream • Planning seeds • Slime/goop • Wet noodles

Activities such as these could be implemented alongside speech and language therapy to desensitize children to tolerate a variety of food and textures. This hierarchy can be implemented into therapy at school, as well as be given to parents/caregivers for ideas to implement at home. The idea is that as the child progresses through the hierarchy, they may need more support (e.g., visual, verbal, or tactile) from the clinician/caregiver. The level of support is slowly decreased

based on the child's comfort with the activity. The same activity may be used for all children during a school day, as the activity level can be adjusted to increase or decrease the complexity of tasks specific to the child's needs.

Fading and Shaping. Fading and shaping incorporates more of a behavioral approach, where the idea is that by reinforcing successful approximations of the desired behavior, the desired behavior will be developed (Silverman, 2015). Shaping and fading can be done by "gradually altering the taste, color, texture, and exposure to the food, coupled with positive reinforcement" (Kerzner et al., 2015, p.349). Tables 5 and 6 represent Silverman's (2015) examples of shaping (e.g., increasing behaviors) and fading (e.g., decreasing behaviors) in intervention.

Table 5.

Increasing Desired Behaviors (Silverman, 2015, p.38)

Strategies	Definition	Examples of Interventions
Positive reinforcement	Increases the frequency of a desirable feeding behavior due to the addition of a reward immediately following the desired feeding response.	• Cheering for a child who tastes a new food • Giving a sticker as a reward for reaching a food volume goal Offering a preferred food after the child accepts a new or nonpreferred food
Negative reinforcement	Increase the frequency of a desirable feeding behavior when the consequence is the removal of an aversive stimulus immediately following the desired feeding response.	• Avoidance conditioning occurs when a behavior prevents an aversive stimulus from starting or being applied (e.g., if a new food is accepted, the child will not have an increase in the total number of bites needed to reach the bite goal • Escape conditioning occurs when behavior removes an aversive stimulus that has already started (e.g., release of a physical restraint when the child accepts the food presented)
Discrimination training	This technique teaches the individual that specified behaviors will be reinforced in the presence of a defined stimulus. The reinforcement schedule or the targeted behavior may evolve to build more complex behaviors.	• Positively reinforcing requested feeding behaviors but no other behaviors observed during the meal • Modeling a desired feeding behavior and then praising when the behavior is exhibited by the child • Shaping a behavior by reinforcing successive approximations of a more complex or higher-order behavior

Table 6.

Decreasing Undesired Behavior (Silverman, 2015, p.39)

Strategies	Definition	Examples of Interventions
Extinction	Reduces the frequency of an undesired feeding behavior due to the removal of reward immediately following the undesired feeding response	• Ignoring inappropriate feeding behaviors • Continuing to prompt desired feeding behavior
Punishment	Reduces the frequency of an undesired feeding behavior by presenting an aversive stimulus or removing a rewarding stimulus as a consequence of undesired behavior	• The child receives a verbal rebuke for noncompliance • The child is given a timeout • Preferred activities or toys are withheld after the meal
Desensitization	The negative behavior is reduced by pairing repeated exposures to the aversive stimulus (e.g., new or nonpreferred food) in the absence of an aversive event or with the presence of a positive reinforcer.	• The child's physiological anxiety response is reduced after numerous exposures • Distraction techniques may be paired with the exposures (e.g., plays with preferred toy) • Relaxation techniques may be used to reduce or eliminate anxiety response when the child is presented with the feared stimulus

These guidelines suggested by Silverman (2015) may be implemented during school lunch or snack, as well as provided to parents/caregivers to implement during mealtimes at home.

Increased or Decreased Oral Sensation. Providing increased or decreased oral sensation may be appropriate for a child depending on their reactions (e.g., hypo- or hypersensitive) to oral stimulation (Kerzner et al., 2015). For children with hyposensitivity, strategies to provide increased oral sensation may include providing foods with stronger flavors, such as sour or spicy, and providing a mirror to see the food/mess around the mouth. For children with hypersensitivity, providing bland foods with neutral temperatures and providing a napkin to wipe off their mouth while eating may help decrease anxiety toward trying new foods (Twachtman-Reilly et al., 2008). These strategies may be implemented at school and provided in parent education.

Barriers. Anderson (2018) suggests strategies to help children with Sensory Food Aversions for SLPs working in school systems that do not provide direct feeding services. Activities may be implemented while targeting other speech/language/pragmatic goals. Such activities may include identifying foods while working on articulation goals, describing foods when targeting descriptive language goals, going on a "picnic" when targeting pragmatic goals, and incorporating sensory activities throughout therapy (Anderson, 2018). Additionally, SLPs should be familiar with community resources for feeding services and refer children for additional intervention if necessary (D'Angelo, 2018).

Summary

In order to meet the nutritional needs of children with ARFID/Sensory Food Aversions, it may be the SLP's role to advocate on behalf of the child. If a child with or without ASD is nutritionally compromised, it may negatively affect their academics and their ability to respond to a variety of treatment approaches, including occupational therapy, speech-language therapy, and physical therapy (Strickland, 2009). Therefore, providing intervention to children with Sensory Food Aversions in the schools is beneficial to the child, his or her family, teachers, and other specialists working with the child. If the child is receiving feeding services at a community-based feeding clinic, collaboration between the school-based SLP and feeding team is recommended. This chapter presented information on nutritional deficiencies as a consequence of Sensory Food Aversions and the potential impact of nutritional deficiencies on academic development, in addition to evidence for the necessity and benefits of incorporating sensory-based feeding services in the schools. Chapter three provides the methodology of the research and describes the research ethics, design, and procedures.

Chapter 3. Methodology

The study aimed to shed light on SLP's knowledge of Sensory Food Aversions and nutritional deficiencies, skills and current practices related to feeding intervention, and potential interest in understanding and treating feeding disorders in the schools. The purpose of this study was to explore school-based SLP's perceptions of their knowledge and skills related to Sensory Food Aversions, as well as determine what resources are available for the assessment and treatment of children with Sensory Food Aversions. This chapter depicts the methodology used for the survey research study.

Research Ethics

The research principles of respect for others, beneficence, and justice were taken into account in the design of the study as a whole and in developing the survey (Orlikoff et al., 2015). Institutional-review-board approval was obtained on January 21, 2020. Participant privacy and confidentiality were paramount in this study. To ensure the privacy and security of participant information, the secure version of SurveyMonkey™ was used to store data. All data were stored according to Institutional Review Board standards. Data includes information on participant demographics, responses to questions, and narrative comments.

Research Design

A quantitative, descriptive, exploratory research design was selected for the study. Survey research was conducted using a self-developed questionnaire (Orlikoff et al., 2015). The research questions guided the development of a survey instrument/questionnaire:

1. What self-perceived knowledge do Speech-Language Pathologists in the schools have about Sensory Food Aversions in children?

2. What self-perceived skills do Speech-Language Pathologists in the schools have to provide intervention for Sensory Food Aversions in children?
3. What self-perceived knowledge do Speech-Language Pathologists in the schools have about the effects of nutritional deficiencies on academic performance?
4. Do Speech-Language Pathologists in the schools have access to resources in the community to meet the needs of children with Sensory Food Aversions?

Participants. Convenience sampling including members of school based SLP online groups was used to obtain participation in the survey and reduce the risk of sampling error (Ponto, 2015). Research inclusion criteria predetermined that only respondents who were at least eighteen years of age, employed full-time or part-time in a school, and held their ASHA Certificate of Clinical Competency would be included in the study. SLPs not eighteen years of age, not working in the schools, and/or those who do not have their Certificate of Clinical Competency were excluded from participating in this study. Participants are referred to as respondents following completion of the survey.

Participant Demographics. Seventy-nine SLPs responded to the survey (N=79), however not all respondents completed the demographics portion as n=70 for all items except years of experience (n=69) and employment hours (n=71). Responses were collected from all five regions of the United States, with the highest response rate noted from the Midwest (28.57%) and a majority (54.29%) working in a suburban location. As displayed in Figure 2, experience as an SLP in the school setting ranged from one to twenty-one years or longer, with a median of 15-20 years ($\tilde{x}$ = 15-20), and a mode of 21 or more years (Mo=21+). Eighty-five percent (85%) of SLPs indicated they are employed full time. Figure 3 displays the variety of school contexts, with four respondents indicating “other”. These additional contexts include a private school for children

with ASD Preschool-fourth grade, Deaf and Hard of Hearing students of all ages, students age three to twenty-one, and working in a cross-categorical classroom at the elementary level. Figure 4 displays respondents' average caseload size, with the majority (45.71%) of caseloads in the range of 26-50 students.

Figure 2.

Years of Experience in the School Setting (n=69)

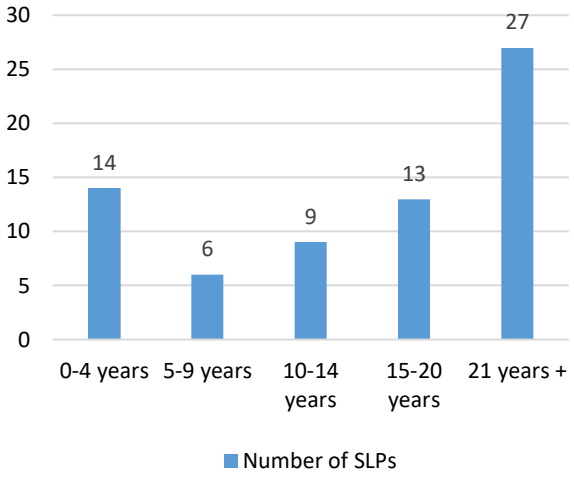


Figure 3.

School Context of Employment (n=70)

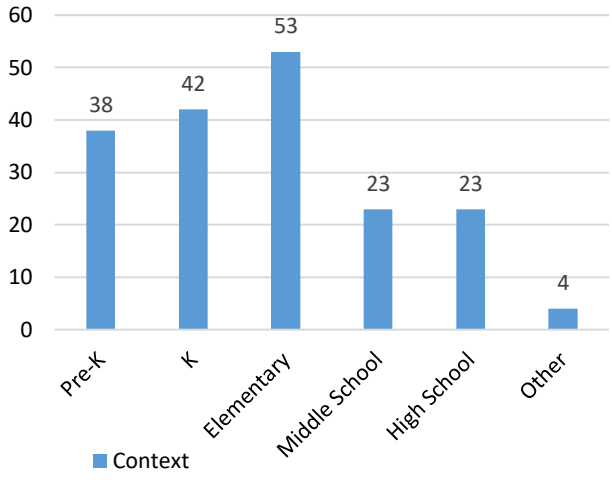
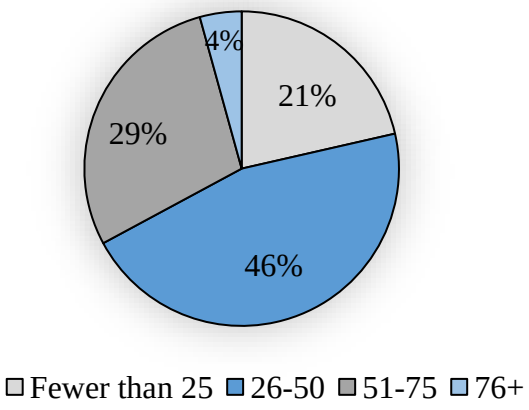


Figure 4.

Average Caseload Size (n=70)



Materials. A survey (Appendix) titled "School-Based Speech Language Pathologist's Perceptions of Sensory Food Aversions in Children" was developed based on an in-depth literature review to gain information regarding school-based SLP's perceptions of their knowledge and skills related to Sensory Food Aversions, as well as determine what resources are available for the assessment and treatment of children with Sensory Food Aversions. Experts in the field of research and feeding were consulted regarding the layout and content of the survey, and final changes were made. Strategies suggested by Ponto (2015) and Kelley et al. (2003) were incorporated, such as using clear and well-presented questions and a user-friendly survey design were incorporated to reduce the risk of measurement error. Following the development of the questionnaire, a pilot survey was designed to evaluate the question content and feasibility (Orlikoff et al., 2015).

Survey Questions. The survey consisted of four content sections: self-perceived knowledge about Sensory Food Aversions, self-perceived skills to assess and provide intervention for Sensory Food Aversions, self-perceived knowledge about the effects of nutritional deficiencies on academic performance, and access to resources to meet the needs of children with Sensory Food Aversions. The self-perceived knowledge about Sensory Food Aversions section surveyed participants' awareness of the term "sensory-food aversion", training participants received on the topic, the occurrence of Sensory Food Aversions on the participants' current caseload, their opinions on providing intervention for Sensory Food Aversions in the schools, and whether or not they have children on their caseload who would benefit from services at an outside clinic. The self-perceived skills section surveyed the current practices of SLP's incorporating sensory activities into therapy and the confidence levels of SLP's in the assessment, treatment, and collaboration with other service deliver professionals when working

with children with Sensory Food Aversions. The self-perceived knowledge about nutritional deficiencies section surveyed respondent's familiarity with the impact of feeding disorders on nutritional deficiencies and the impact of nutritional deficiencies on learning. The availability of resources section included questions about school guidelines related to feeding disorders, confidence levels and frequency of collaboration with related professionals in feeding teams, referral practices to pediatric feeding clinics, and prevalence of feeding clinics in their area**.**

Respondent demographic questions were included in order to enhance descriptive analysis (Kelley et al., 2003). The demographics section of the survey provided information regarding the participants' level of education, years of experience working in the school system, school context, current caseload size, location and region of residence, and level of interest in receiving additional information on sensory-food aversion treatment in the schools. The survey concluded with two open-ended questions addressing the benefits and challenges or barriers of treating children with Sensory Food Aversions in the schools.

The survey consisted of 29 multiple choice, yes/no, select-all-that-apply, Likert scale, and open-ended questions. Multiple choice questions were used to evaluate the occurrence of Sensory Food Aversions on current caseload, treatment cases of school-based feeding teams, and respondent demographics. Yes/no questions were incorporated to evaluate the SLP's familiarity with the term "Sensory Food Aversions", occurrence of feeding disorders, whether their school-system considers Sensory Food Aversions in the SLP's scope of services, establishment of school guidelines on providing services, opinion on treating Sensory Food Aversions, practices incorporating sensory activities, presence of a feeding team, vicinity of outside feeding clinics, referral practices to pediatric feeding clinics, familiarity with nutritional deficiencies, and familiarity of the impact of nutritional deficiencies on learning. Select-all-that-apply questions

were included to determine the types of training received about Sensory Food Aversions, reasons for incorporating sensory activities into speech and language intervention, members included in a school-based feeding team, and the school context of the respondent. Two Likert scales were included to evaluate confidence levels in assessing and treating Sensory Food Aversions and collaboration practices. Two open-ended questions were incorporated for SLP's to explain benefits and challenges/barriers to providing intervention for Sensory Food Aversions in the schools.

Pilot Study. Following IRB approval, a pilot study was conducted in order to assess the question content, instructions, and feasibility of the survey (Kelley et al., 2003; Orlikoff et al., 2015). Participants for the pilot were selected according to the following criteria: they were at least eighteen years of age, employed full-time or part-time in a school, held their ASHA Certificate of Clinical Competency, and agreed not to participate in the final survey. Participants were contacted by email, which included a description of the survey research and request for their participation. Upon following the survey web link, participants were redirected to a consent page in which they were to "agree" or "disagree" to participate. Following agreement to consent, participants were directed to the questionnaire. Participants who did not agree to consent were removed from the survey platform and excluded from participating.

Three SLPs acted as respondents to the pilot study (*N*=3). Responses to demographic questions indicated participation from the Midwest, Southeast, and Southwest with varying years of experience. Table 7 represents the characteristics of pilot participants.

Table 7.

Pilot Participant Characteristics (n=3)

Characteristics	Respondent 1	Respondent 2	Respondent 3

Region	Midwest	Southwest	Southeast
Years of Experience	1-4	1-4	21+
Location	Suburban	Urban	Suburban
Employment Status	Full-Time	Full-Time	Part-Time

Although limited in numbers, it appears the pilot respondents were from a variety of regions, employed in diverse locations, and ranged in years of experience. Following the survey, the pilot respondents were presented questions in order to provide feedback on their experience. Table 8 displays pilot respondents' responses to the questions regarding the development and feasibility of the survey. Responses were paraphrased to ensure participant confidentiality.

Table 8.

Pilot Study Responses (n=3)

Question	Respondent 1	Respondent 2	Respondent 3
Approximately how long did the survey take you to complete?	10 min	10 min	10 min
Did you understand the instructions? **What, if anything, was unclear?**	The instructions were clear.	I thought it was clear.	There were some questions that needed a "does not apply" option.
Did you ever feel forced to make a choice that didn't fit your particular situation? **If so, on which question(s) and why?**	Yes. Some needed N/A but I had to choose an answer, so my real answer did not fit. (Respondent gave example of which response was not a true description)	No	Yes, some of the questions I needed to put N/A but there was not an option. (Respondent included question numbers that did not have N/A and had to write in the comments the necessary option)

Were questions reasonable and appropriate?	Good Questions	Questions were reasonable and appropriate.	Questions were reasonable and appropriate.
How, in your judgement, could the questions be improved?	Some questions I said no but then would be asked next one as if I said yes	Questions could be better by having an option of "does not apply".	Improve by making sure all questions could be answered if didn't apply. (Respondent included certain questions as examples)

The information obtained from the pilot study also informed logistical defaults that were not functioning properly in the survey. For example, when a participant responded "no" to a question, the logistics within SurveyMonkey™ were intended to direct them to a different question opposed to if they responded "yes". Therefore, the pilot respondents were directed to questions that did not apply to their previous responses and did not contain an appropriate answer choice (such as N/A). Based on this feedback logistics within SurveyMonkey™ were adapted and ensured of their function. The content of the questions remained the same, as pilot feedback indicated they were clear. ETSU IRB indicated the changes to the survey were sufficient and that the study could proceed.

Procedures

Data Collection. The secure version of the online survey system Survey Monkey™ was used to collect data regarding school-based SLP's perceptions of Sensory Food Aversions in children. Following approval from ETSU IRB, respondent recruitment was initiated. The survey was posted by the primary researcher in ASHA Special Interest Group 16 titled "School-Based Issues", on January 28th, 2020. Members of this group received a notification of the post in their email containing a link to the survey. An informed consent page was provided following activation of the web link. The informed consent page provided participants an overview of the

study, ensured participation was voluntary, and provided contact information for questions related to the research. Following agreement to consent, participants were directed to the questionnaire. Participants who did not agree to consent were removed from the survey platform and excluded from participating. One reminder was posted on February 16th, 2020 to increase response from members of SIG 16.

A modification of the IRB was requested in order to obtain approval for posting the survey in additional online school based SLP groups on February 7th, 2020. This modification was approved by the IRB on February 13th, 2020 and posted to the following groups later that day. These online groups included: Speech Pathologists at Large, SLPs for Evidence Based Practice, SLPeeps-Middle & Highschool: For Speech-Language Pathologists in Schools, School-Based SLP, School-Based SLPs: For Professionals Only, Preschool Speech Language Pathologists, and School-Based SLPs: Moderate to Severe Students. The survey was closed on February 23rd, 2020 with seventy-nine SLPs acting as respondents (*N*=79).

Data Analysis. The online survey system SurveyMonkey™ allowed analysis of the data using descriptive statistics. Descriptive statistics were used to represent data obtained from questions regarding respondent characteristics and Correlational statistics were used to determine relationships between SLP respondent's perceived level of knowledge and perceived level of training (Orlikoff et al., 2015). Individual responses to the question regarding SLPs levels of training were compared to their confidence ratings in service delivery for children with Sensory Food Aversions. In order to obtain numerical values, respondents amount of trainings (X) were assigned numerical value, for example: 0 for no training, 1 if they selected one type of training (e.g., graduate course), 2 if they selected two types of training (e.g., graduate course and Food Chaining). Total amounts of training ranged from 0-5. Additionally, numerical values were

assigned to confidence intervals (Y) in question 11. The following values were assigned: 1 for no confidence, 2 for somewhat confident, 3 for neutral, 4 for somewhat confident and 5 for very confident. Using Pearson's Correlation Coefficient, the most-extreme possible value for COV_{XY} is the product of S_X and S_Y, therefore the most-extreme value for r_{XY} is ±1.00. Results of the two open-ended questions were analyzed qualitatively by thematic analysis, which seeks to identify patterns across data (Orlikoff et al., 2015; Clarke & Braun, 2013).

Summary

Chapter three provided an overview of the methodology for the research. The research ethics, design, and procedures were described. Chapter four will discuss the data analysis and results of the study, including the findings related to the research questions and emergent themes.

Chapter 4. Results

This chapter will provide the presentation and analysis of data collected. A total of seventy-nine participants (*N*=79) acted as respondents to the survey questionnaire. Not all respondents answered each question, leading to different *n* throughout the results. Results are presented according to the specific aims of the study using descriptive and inferential statistics. The study aimed to shed light on SLP's knowledge of Sensory Food Aversions and nutritional deficiencies, skills and current practices related to feeding intervention, and potential interest in understanding and treating feeding disorders in the schools. The purpose of this study was to explore school-based SLP's perceptions of their knowledge and skills related to Sensory Food Aversions, as well as determine what resources are available for the assessment and treatment of children with Sensory Food Aversions.

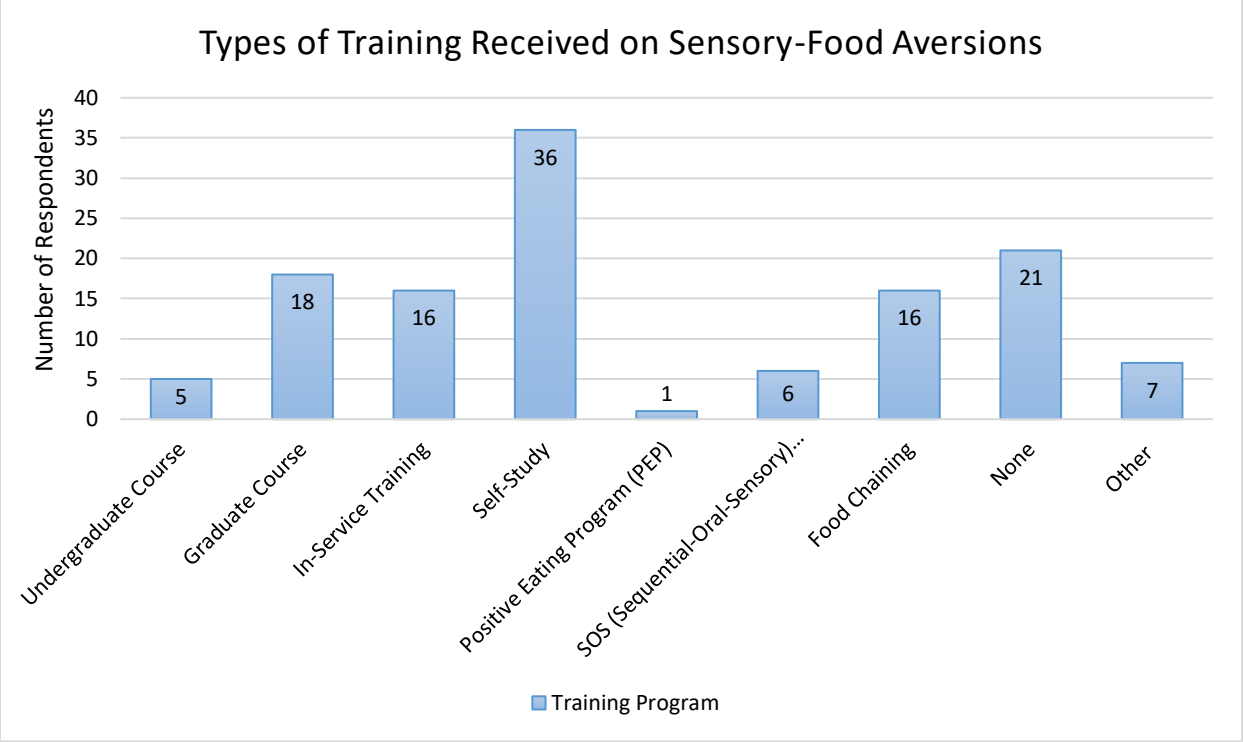
Perceived Knowledge of Sensory Food Aversions

Research Question 1: What self-perceived knowledge do Speech-Language Pathologists in the schools have about Sensory Food Aversions in children?

Of the 79 participants (*N*=79), 74.36% of respondents demonstrated they are familiar with the term "Sensory Food Aversions", while 25.64% demonstrated they are somewhat or not familiar with the term. Perceived knowledge was assessed through surveying the types of training SLPs have received on Sensory Food Aversions. Levels of training varied from none (28.38%, *n*=74), self-study (48.65%, *n*=74), undergraduate and graduate coursework (31.08%, *n*=74), to in-service training (21.62%, *n*=74), and specific training programs (31.08%, *n*=74). Figure 5 displays the types of training SLPs have received on Sensory Food Aversions.

Figure 5.

Types of Training Received on Sensory Food Aversions (n=74)



Results displayed in Figure 5 suggest the most frequent type of training is that of self-study, while no training was the next most common.

In regard to the presence of children with Sensory Food Aversions on SLP's caseloads, 43.42% (*n*=76) responded yes, they suspect they have children on their caseload, while 42.11% (*n*=76) responded that they did not. The definition of Sensory Food Aversions was provided and the question regarding presence of children with Sensory Food Aversions was repeated in question 4. As displayed in Figure 6, 95.35% (*n*=43) of SLPs reported "yes", they suspect they have children on their caseload with Sensory Food Aversions. Of the respondents who declared they do have children on their caseload with Sensory Food Aversions, 65.85% (*n*=41) estimated they have 1-4, while 34.15% (*n*=41) estimated they have 5 or more students on their caseload with Sensory Food Aversions, leading to a group mean of 4.65 (*M*=4.65) with a standard

deviation of 3.34 (*SD=3.34*). Figure 7 below represents the distribution of children with Sensory Food Aversions on SLP's caseloads.

Figure 6.

Presence of Children with Sensory Food Aversions on SLP's Caseloads (n=76; 43)

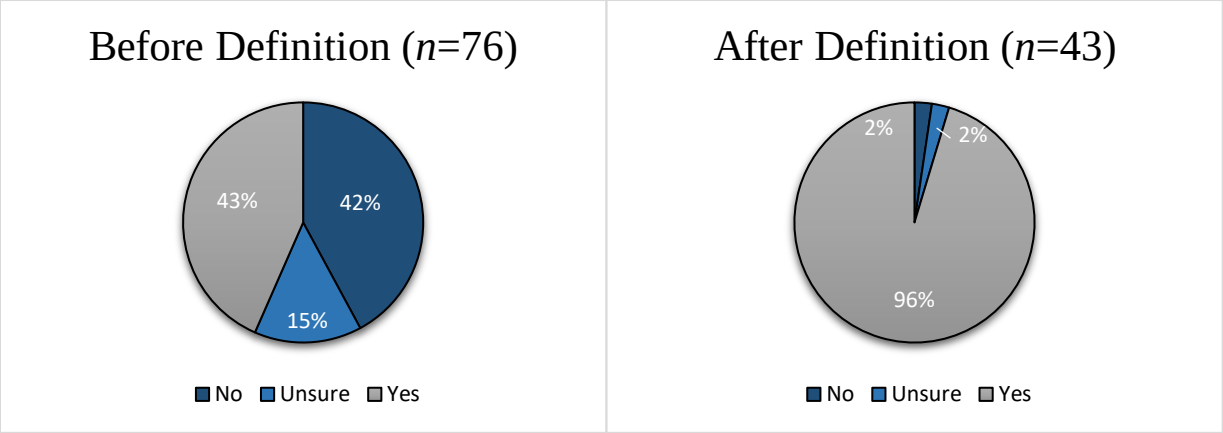
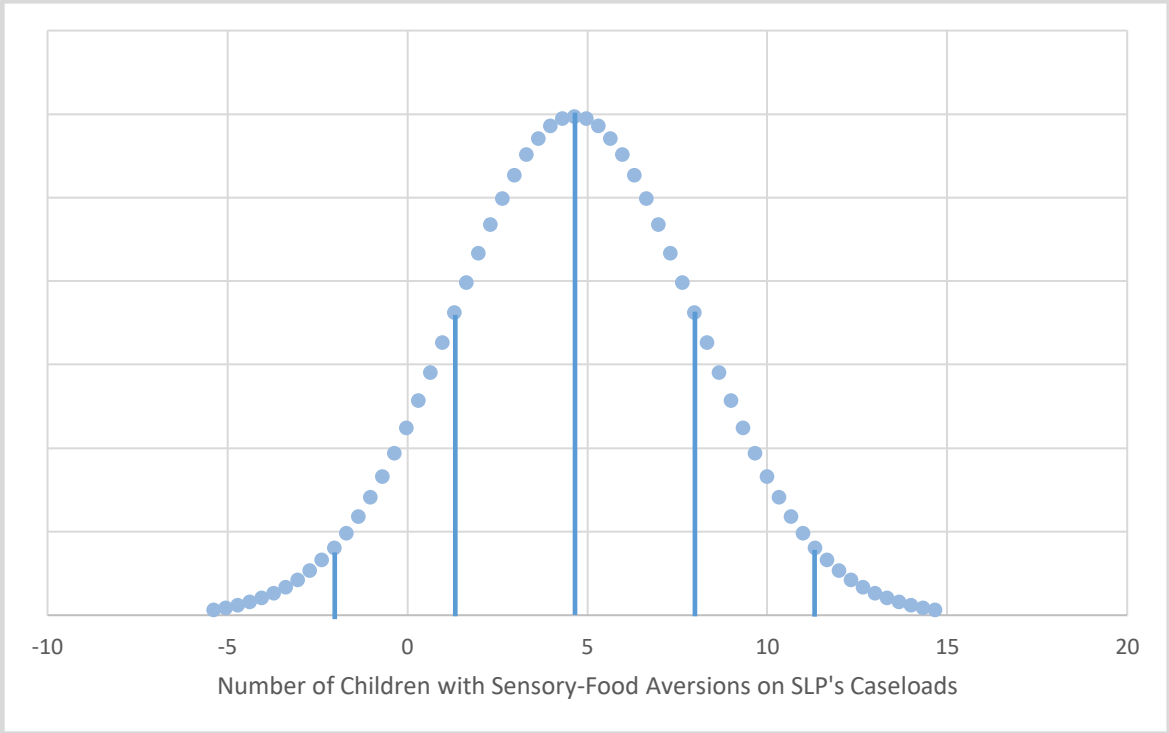


Figure 7.

Prevalence of Children with Sensory Food Aversions on SLP's Caseloads (n=41)



Results demonstrated in Figure 7 suggest that the 41 SLPs who responded to this question have between 1 and 9 students on their caseload with Sensory Food Aversions. Additionally, of the respondents whose school systems do not consider Sensory Food Aversions within an SLP's scope of practice, 52.31% (*n*=65) of SLPs believed it would be beneficial to provide intervention for Sensory Food Aversions in the schools, while 23.08% (*n*=65) do not believe it would be beneficial and 24.62% (*n*=65) were undecided.

Perceived Skills to Provide Intervention for Sensory Food Aversions in the Schools

Research Question 2: What self-perceived skills do Speech-Language Pathologists in the schools have to provide intervention for Sensory Food Aversions in children?

The analysis of the Likert-scale responses regarding confidence levels were analyzed by grouping together the following categories: no confidence and lacking in confidence; somewhat and very confident. Respondents confidence levels in a variety of skills related to the assessment and treatment of Sensory Food Aversions are displayed below in Figure 8.

Figure 8.

Confidence Levels in Service Delivery for Sensory Food Aversions (n=72)

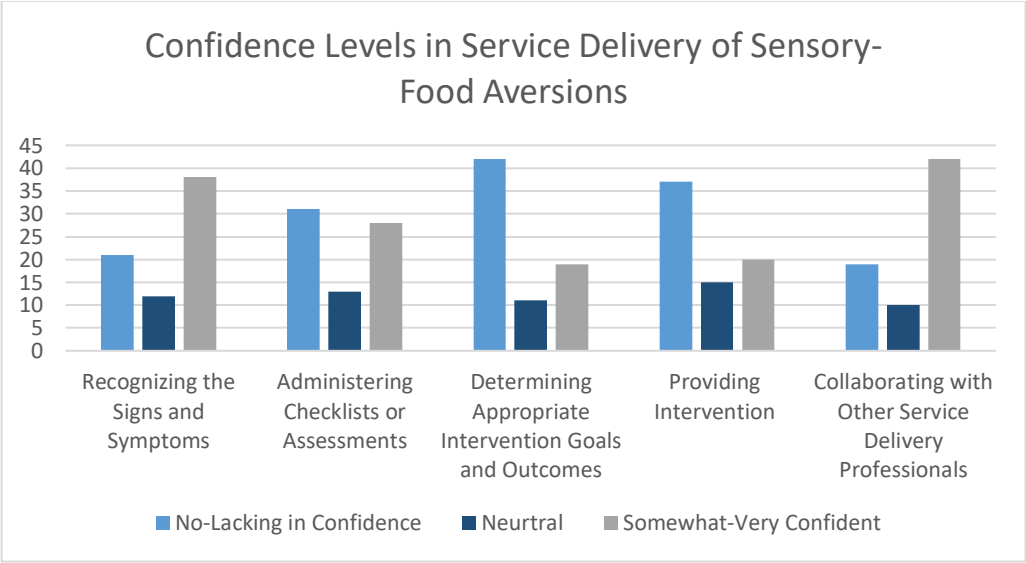


Figure 8 suggests that SLPs who responded (*n*=72) are most confident in their ability to collaborate with other service delivery professionals and in recognizing the signs and symptoms of Sensory Food Aversions, while they are less confident in administering assessments, determining appropriate intervention, and providing intervention for children with Sensory Food Aversions. In regard to whether SLPs incorporate sensory-activities into speech-language therapy, 97.33% (*n*=75) responded yes or sometimes, while 91.67% (*n*=75) declared the reason being to improve child's attention, 76.39% (*n*=75) to encourage language production, and 27.78% (*n*=75) for "other" reasons, which were analyzed using thematic analysis. Themes are displayed in Table 9.

Table 9.

Themes Regarding Implementation of Sensory Activities (n=20)

Themes	Number of Comments (24)	Example Comments
New Experiences for Child	2	*"It's fun!!!"* *"To encourage new experiences"*
Co-treat with OT	2	*"I sometimes co-treat with OT"* *"With OT directive"*
Sensory	5	*"To decrease sensory imbalance"* *"To informally assess sensory issues"* *"To food the sensory need"*
Nutrition	2	*"Health and nutrition"* *"To explore foods in a positive and nurturing environment"*
Assessment	2	*"Oral motor function. Swallowing"* *"In my experience, my being aware of sensory preferences & aversions can be part of my detective work w/ a student"*

Engagement	3	*"Has helped me create a positive bond w/ students where they often will engage with me more"* *"Increase motivation"* *"To improve attention readiness to improve verbal communication"*
Calming	3	*"Calming effect"* *"Calming strategy"* *"Calming"*
Regulate	4	*"Regulation"* *"Help regulate the whole child's system"* *"To regulate"*
Reward	1	*"Reward"*

Results displayed in Table 9 suggest that in addition to improving the child's attention and encouraging language production, respondents (*n*=20) incorporate sensory items to integrate sensory experiences, to regulate the child, and to improve engagement.

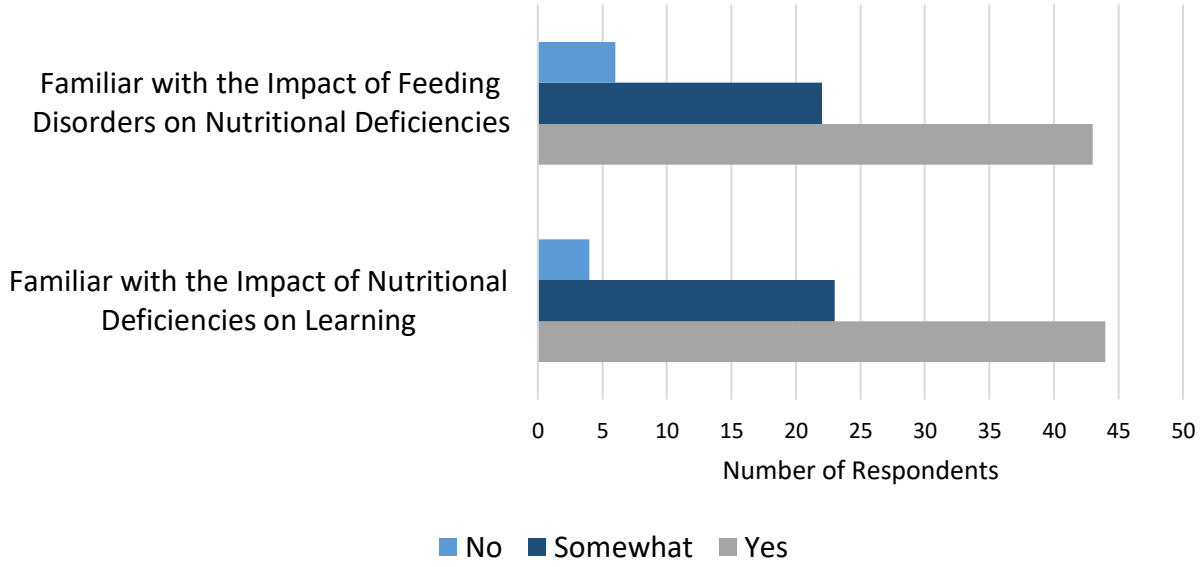
Perceived Knowledge of Effects of Nutritional Deficiencies on Academic Performance

Research Question 3: What self-perceived knowledge do Speech-Language Pathologists in the schools have about the effects of nutritional deficiencies on academic performance?

In regard to SLP's perceived knowledge on the effects of nutritional deficiencies, 91.55% (*n*=71) of respondents reported they are at least "somewhat" familiar with the impact of feeding disorders on nutritional deficiencies, while 94.36% (*n*=71) reported they are at least "somewhat" familiar with the impact of nutritional deficiencies on learning. Figure 9 displays respondents' familiarity with nutritional impact.

Figure 9.

Familiarity with Nutritional Impact (n=71)



Results displayed in Figure 9 suggest a majority of SLPs (*n*=71) who responded to this question are familiar with the impact of Sensory Food Aversions on nutritional deficiencies and the impact of nutritional deficiencies on academic performance.

Access to Resources in the School and Community

Research Question 4: Do Speech-Language Pathologists in the schools have access to resources in the community to meet the needs of children with Sensory Food Aversions?

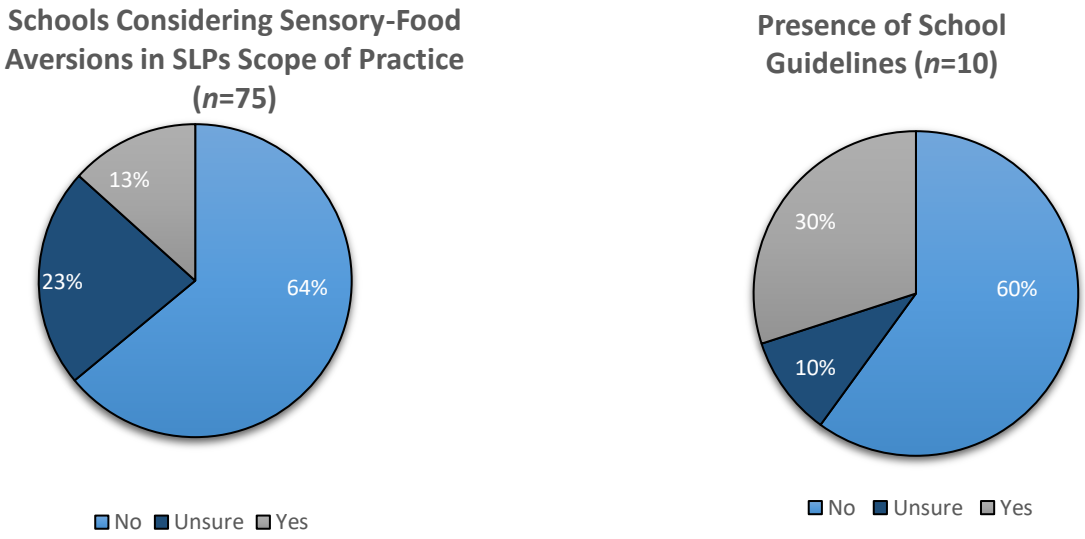
Results of questions related to access to resources in the school and community are presented in three categories, including feeding teams, collaboration, and feeding clinics.

Feeding Teams. In response to question 6 regarding if the school district considers Sensory Food Aversions as part of the SLP's scope of practice, 13% (*n*=75) of respondents reported their school district considers Sensory Food Aversions under their scope, while 87%

(*n*=75) are unsure or do not. As displayed in Figure 10, based on the 13% (*n*=75) of respondents whose school considers Sensory Food Aversions in SLP's scope of practice, 30% (*n*=10) of respondents reported their school providing guidelines for intervention, while 70% (*n*=10) were unsure or did not.

Figure 10.

Schools Considering Sensory Food Aversions in SLP's Scope of Practice and Presence of School Guidelines (n=75; n=10 respectively)

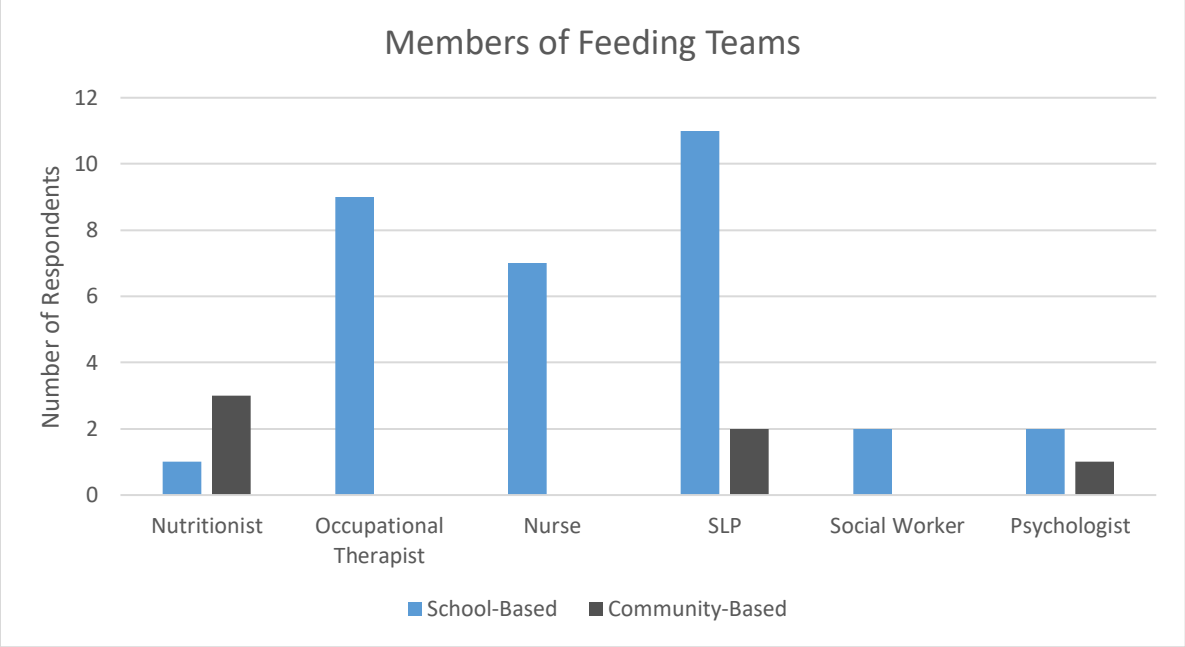


Results displayed in Figure 10 suggest that most schools reported by respondents (*n*=75) do not consider Sensory Food Aversions to be in an SLP's scope of practice and that if they do, a majority of schools reported by respondents (*n*=10) do not provide guidelines for intervention. In regard to the prevalence of feeding teams, 16.67% (*n*=72) of SLP respondents reported having a feeding team at their school, while 83.33% (*n*=72) did not. Based on SLP respondents who reported having a feeding team, 36.36% (*n*=12) reported their team treats only pediatric

dysphagia, while 63.64% (*n*=12) reported their feeding team treats both pediatric dysphagia and food aversions. Figure 11 below displays members of the feeding teams.

Figure 11.

Members of Feeding Teams (n=12)

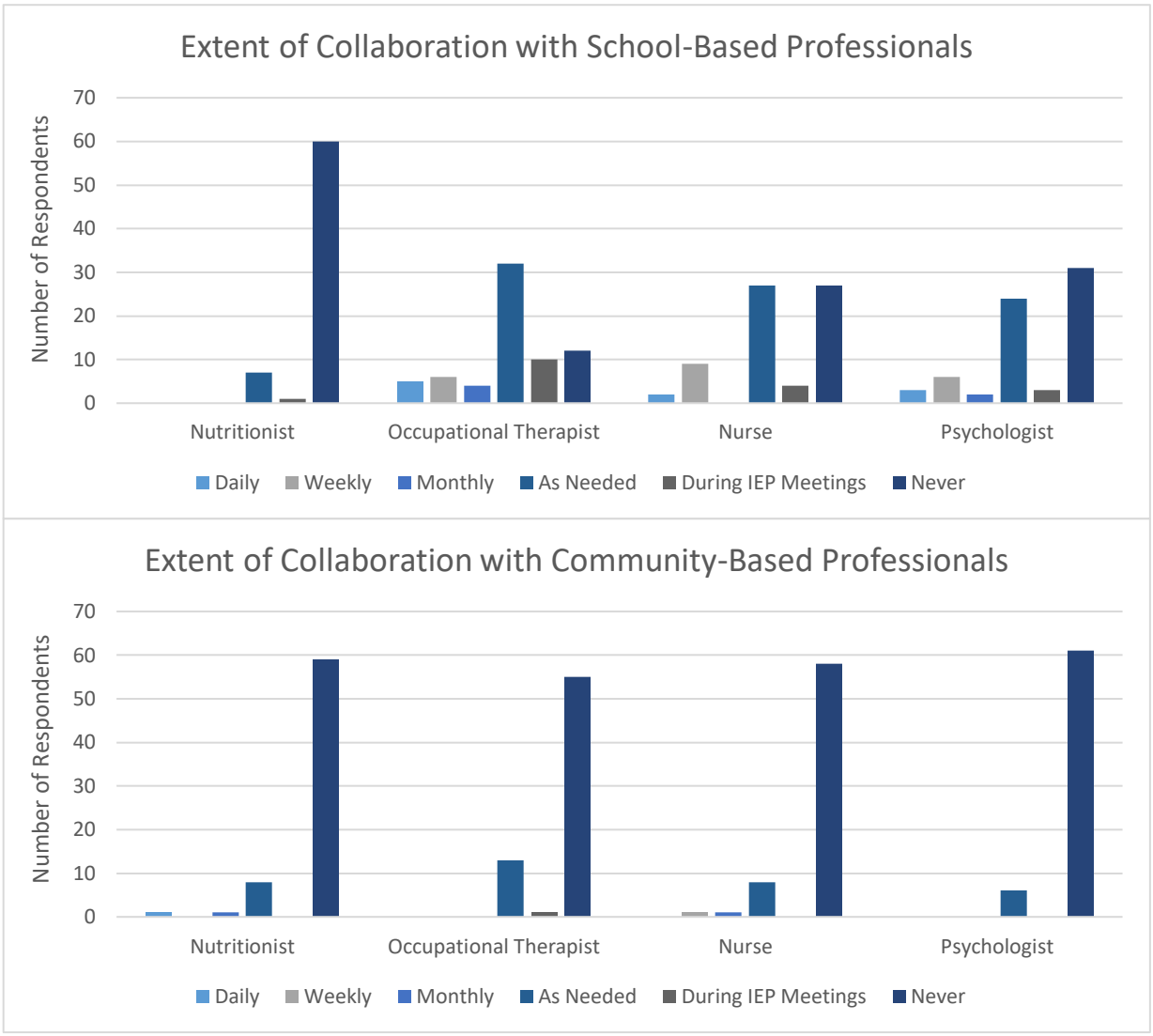


The figure above demonstrates the primary members of SLP respondent's school-based feeding teams include the school-based SLP, school-based occupational therapist, and school nurse.

Collaboration. The extent of collaboration with additional service-delivery professionals when working with children with Sensory Food Aversions was examined. The results of the collaboration are displayed in Figure 12.

Figure 12.

Extent of Collaboration with Service-Delivery Professionals (n=69)



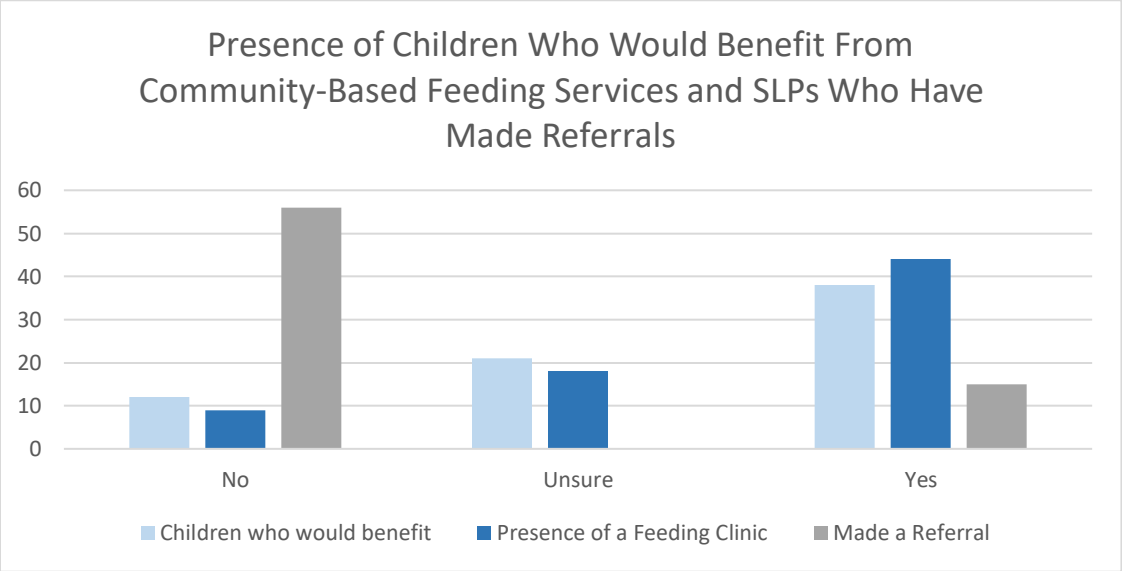
Results displayed in Figure 12 demonstrate that SLP respondents (*n*=69) collaborate with school-based occupational therapists, nurses, and psychologists ranging from daily to never, while 88.24% (*n*=68) SLPs never collaborate with school-based nutritionists and an average of 85.39% (*M*=85.39%; *n*=67-69) never collaborate with community-based professionals, however when they do it is "as needed". Two comments were provided by SLPs regarding collaboration with additional professionals, including the Special Education Coordinator, Lead Teacher,

Special Education Teacher, School Administrator, and a Board-Certified Behavior Analyst (BCBA) as needed.

Feeding Clinics. The prevalence of feeding clinics was examined in order to determine community-based resources for children with Sensory Food Aversions. Of the 71 SLPs who responded to the question (*n*=71), 61.97% of respondents reported the presence of a feeding clinic within a reasonable travel distance from their school, while 25.35% were unsure and 12.68% do not. 53.52% (*n*=71) of SLP respondents reported children on their caseload who would benefit from receiving services for Sensory Food Aversions at a community-based feeding clinic, while 21.13% (*n*=71) of SLPs have made referrals to community-based feeding clinics. Figure 13 displays the referral practices of SLPs to community-based feeding clinics.

Figure 13.

Referral Practices of SLPs to Community-Based Feeding Clinics (n=71)



Results displayed in Figure 13 suggest that SLPs who acted as respondents do have children who would benefit from receiving services at a community-based feeding clinic, while

most respondents reported access to a community-based feeding clinic within a reasonable travel distance from their school. However, most SLP respondents have not referred a child to a community-based feeding clinic for services.

Correlational Statistics

Pearson's Correlation Coefficient was utilized to examine the relationship between SLP's level of perceived knowledge and SLP's perceived skills in providing services for children with Sensory Food Aversions. The strength of correlation between each service delivery category and SLP's knowledge/training was determined according to Evans (1996) guide for the absolute value of *r* and are described in Table 10.

Table 10.

Relationship Between SLP's Perceived Knowledge and Skills (*n*=70)

Service Delivery	r_{xy}	Relationship (Evans, 1996)
Recognizing the signs and symptoms of Sensory Food Aversions	0.4746	Moderate Positive Correlation
Administering checklists or assessments for children with suspected Sensory Food Aversions	0.4601	Moderate Positive Correlation
Determining appropriate intervention goals and outcomes for children with Sensory Food Aversions	0.6827	Strong Positive Correlation
Providing intervention to target Sensory Food Aversions	0.6734	Strong Positive Correlation
Collaborating with other service delivery professionals regarding the needs of children with Sensory Food Aversions	0.4314	Moderate Positive Correlation

Results of the relationships between respondent's perceived knowledge and confidence in skills demonstrate a positive relationship in all areas of service delivery, supporting the expectation that SLP respondents with more training are more confident in their ability to provide services for students with Sensory Food Aversions. Results suggest the strongest correlations between knowledge and training to be in determining appropriate intervention and

providing intervention for children with Sensory Food Aversions. Figures 14 and 15 below display the relationship of those results.

Figure 14.

Relationship Between SLP Training and Confidence in Determining Appropriate Intervention Goals and Outcomes (n=70)

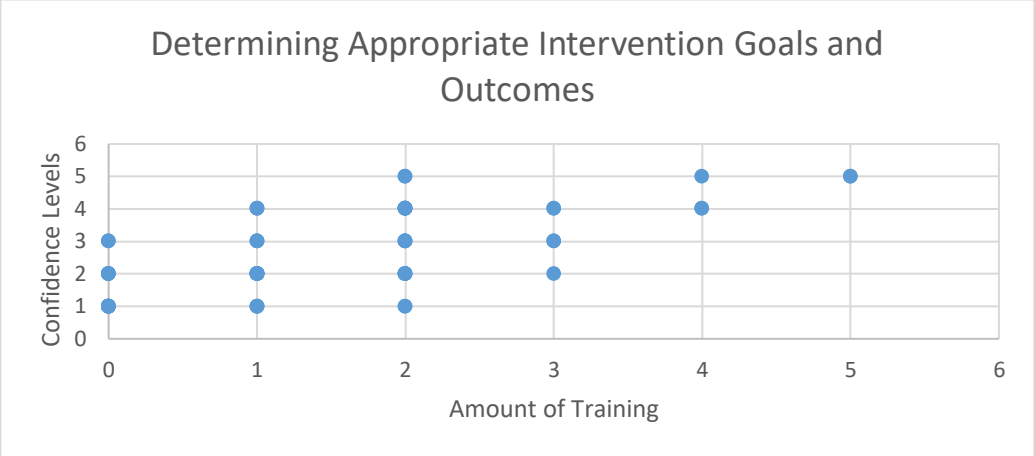
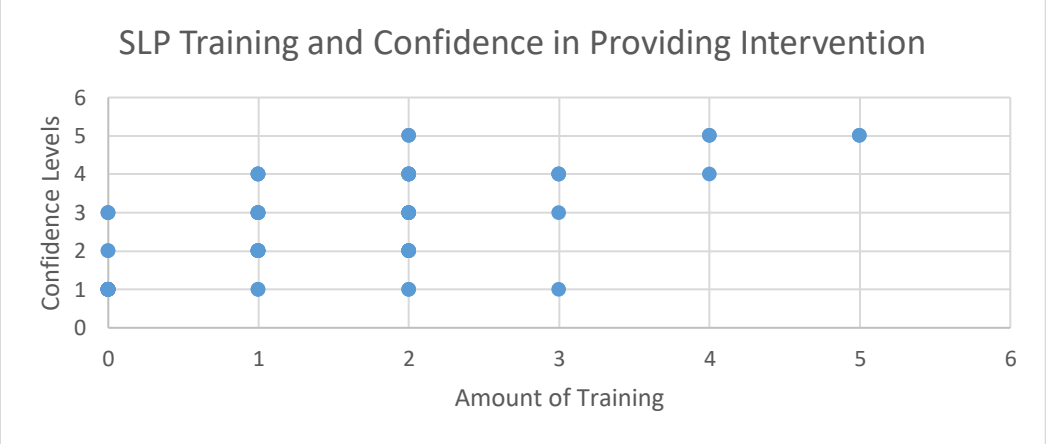


Figure 15.

Relationship Between SLP Training and Confidence in providing Intervention for Children with Sensory Food Aversions (n=70)



Results suggest respondents with less training display less confidence in determining appropriate intervention goals and providing intervention, while respondents with more trianing display higher levels of confidence in those areas.

Thematic Analysis

Thematic analysis was utilized to analyze the results of the two open-ended questions (Orlikoff et al., 2015; Clarke & Braun, 2013). The first open ended question (Question 28) examined the benefits of treating Sensory Food Aversions in the schools and resulted in a total of 46 comments, with 2 excluded as irrelevant remarks, resulting in 44 comments qualifying for thematic analysis. The second open-ended question (Question 29) examined challenges and barriers to treating Sensory Food Aversions in the schools. This question elicited 50 comments, with 11 being excluded due to irrelevant remarks such as "N/A" or "see above", resulting in 39 comments qualifying for thematic analysis. Due to the nature of the responses, themes were identified by combining responses from both questions, as respondents shared barriers/challenges in the first question and benefits/recommendations in the second question. Therefore, a total of 83 comments were used to determine themes. Results were divided into three broad themes, including positive experiences related to treating Sensory Food Aversions, beliefs and recommendations, and barriers SLPs face regarding the treatment of Sensory Food Aversions in the schools. Table 11 below displays the results of thematic analysis.

Table 11.

Response Themes (n=47)

Positive Experiences	Number of Comments (n=4)	Example Comments
Positive Feeding Team Experience	2	*"I am a member of our district's feeding team-we evaluate, consult, treat and train staff, family and the student regarding feeding issues"*

		"We do, thankfully have procedures in place to document and notify parents/guardians & key school Feeding/Swallowing Safety Team staff if signs of dysphagia occur or poor oral intake is observed while student is at school"
Positive Experience Working with Parents	1	*"I have had parents watch an on-line training with me that was purchased by the school. I have worked with parents to help them to expand food inventories for their in the home setting by using chaining approach. As these students bring their own lunches parents provide choices for them that they will eat…I have just consulted with parents"*
Targeting Food-Aversion with Pragmatic Goals	1	*"He was in my lunch group that worked on social language. He would always buy and eat an ice cream bar if they were available that day and once in a while, he would try something crunchy"*
SLP Beliefs and Recommendations	**Number of Comments (n=27)**	**Example Comments**
SLPs should provide intervention	11	*"I think the disorder should be treated in the schools"* *"I wish I was able to provide services in the school"* *"It can be frustrating to see where I can help and not be able to"*
SLPs should not provide intervention	4	***"****I have concerns about further widening our scope of practice, taking on a larger role would not be doable"* *"I don't think it is something I will ever, or should ever, treat in the schools"* *"Setting up an expectation that dysphagia will be addressed at school? Not optimal, in my opinion".*
SLP should be support role	3	*"Supporting others (e.g., OT, nurse, ABA) with food-aversion would be helpful and doable"* *"I see it as a sub-specialty that kind of overlaps with OT scope of practice"*
Intervention should be provided at Community-based Clinic	7	*"To me, this is something for private OTs and other professionals to address, not school-based personnel"*

		"In my teams this concern has been private clinic or OT driven" *"I feel for the most part that if the student's nutritional needs are being met as deemed by child's physician, that treating Sensory Food Aversions should be done in a clinic setting."*
Frequent Concern from parents	1	*"Sensory-food aversion is a concern I hear frequently from the parents of the pre-K students I work with"*
Oppose ABA approach to intervention	1	*"That said, I strongly oppose and ABA approach to this, as sensory aversions are much more than mere pickiness, and cause serious discomfort. A child should not be forced to eat foods they are averse to, particularly if their nutrition is within acceptable limits"*
Challenges/Barriers	**Number of Comments (n=52)**	**Example Comments**
Limited Knowledge	5	***"****Most SLPs that have only worked in the schools have limited knowledge of feeding issues at all"* *"I suspect some of my students might have more stable blood glucose levels, better hydration, better attention spans & overall energy levels (and possibly less hyperactivity/irritability" if we did have more training & intervention re: Sensory Food Aversions while students are at school."* *"I just really lack knowledge in this area"*
School Policy/Regulation	15	*"SLPs are unable to treat feeding disorders within my school system"* *"School district policies keeping us from working on it"* *"It is not seen as part of my scope (although many of my colleagues have little idea what I do anyway.)"*
Parents/Caregivers	4	*"In my experience, many parents/guardians of students with sensory-based challenges frequently do not seem to know &/or understand what these problems are when they occur. I work in a Title 1 (lower socioeconomic) school and many of our parents still don't understand the difference between medical diagnosis vs and educational disability and*

		often do not seek out additional outside therapies/resources in the community." *"The largest barrier for treating sensory-based food aversions are the families wanting to follow through with our recommendations"*
School Limitations to Referring to Community Services	3	*"Will not allow referrals to outside agency fearing financial responsibilities"* *"We can't refer students to outside providers because that could put the district in the position of having to pay for those services (if we're saying the child needs the services from an educational standpoint, it would be the district's responsibility to cover them), and we aren't really supposed to do that."*
Feeding team limitations	4	*"There used to be an informal feeding group too but it cost way too much money and too much prep for us to sustain without the district's help"* *"The feeding team is solely responsible for determining who qualifies for services, and even then it is only under 3 specific circumstances that they will pick a kid up for services (not getting adequate nutrition for their day/falling asleep in class, not getting adequate nutrition to grow/failure to thrive situations, unsafe swallow. They wouldn't pick up a 3rd grader who still drank from a bottle and only ate stage 1 baby food because according to them he was getting what he needed to function at school"*
Lack of prevalence on caseload	2	*"I do not have any students with this issue at the moment"* *"With my student's it is not a priority at this time"*
Service-delivery issue with OT	3	*"OTs do all of the feeding therapy"* *"I tend to defer to the OT"*
Lack of adverse effect on education	8	*"This disorder was viewed by our special ed team as primarily a medical problem that did not have a significant adverse effect on his performance in the school setting"* *"They don't see feeding disorders as having a direct educational impact"* *"What's the educational impact?"*

Time restraints	3	*"Time constraints"* *"Where is the time to add these students?"*
Lack of Community-based services	3	*"No reasonable access to specialty clinics – closest is 3 hrs away"* *"Because families may not have or choose to access outside services"*
Food allergies	1	*"Food allergies"*
Multi-faceted	1	*"The challenge is multi-faceted"*

Results presented in Table 11 suggest there are respondents who wish to provide services to children with Sensory Food Aversions, however challenges/barriers such as school policy and qualifying for adverse effect on education are large contributors which prohibit SLP respondent's ability to provide services.

Summary

To summarize, the study reveals a lack of respondent's perceived knowledge of Sensory Food Aversions. In terms of perceived skills, respondents with less training lack confidence in skills for providing intervention for Sensory Food Aversions. Findings also suggest minimal presence of school-based feeding teams and minimal collaboration with community-based professionals. Respondents reported access to community-based resources, however a lack of referrals to these resources was identified despite the suspected presence of children with Sensory Food Aversions on SLP respondent's caseloads.

Chapter four presented the results of the study. Chapter five will discusses the findings, limitations of the study, clinical implications, recommendation for future research, and conclusions.

Chapter 5. Discussion and Conclusions

This chapter will provide the discussion and conclusions. The discussion will include the interpretation of results, limitations of the study, clinical implications, and recommendations for future research. The conclusions will summarize the findings.

Discussion

The purpose of this study was to explore school-based SLP's perceptions of their knowledge and skills related to Sensory Food Aversions, as well as determine what resources are available for the assessment and treatment of children with Sensory Food Aversions.

Interpretation of Results. Interpretation of results are reported according to the research questions.

Perceived Knowledge of Sensory Food Aversions. *Research Question 1: What self-perceived knowledge do Speech-Language Pathologists in the schools have about Sensory Food Aversions in children?*

Findings suggest most SLPs in this study are at least "somewhat" familiar with the term Sensory Food Aversions. Respondents have received a variety of trainings on Sensory Food Aversions, though the most common was through self-study, and the second most common was no training. When surveyed on the prevalence of students with Sensory Food Aversions on SLP's caseloads, 43.42% (n=76) of respondents suspected they had children on their caseload with Sensory Food Aversions. However, after the definition of Sensory Food Aversions was provided, 95% (n=43) of respondents indicated they do suspect to have children on their caseload with Sensory Food Aversions. This increase in numbers following brief education on Sensory Food Aversions supports the value of education as a necessary step for the foundation of

providing intervention. Results of thematic analysis indicate an emergent theme regarding lack of knowledge as a barrier to providing services for children with Sensory Food Aversions.

These findings suggest that respondents lack perceived knowledge regarding Sensory Food Aversions and that providing training on Sensory Food Aversions should be an essential component of graduate training and/or continuing education opportunities. The ASHA *Code of Ethics* states that in order for an SLP to perform assessment and treatment, they must be confident in that area of service delivery (ASHA, 2016). However, without the proper education and training it is unlikely they are competent to provide feeding intervention. Results of the study are inconsistent with results from the *ASHA 2018 Schools Survey*, in which only 9.7% (*n*=1,620) of SLP respondents working with children five and under indicated lack of sufficient training or professional development affecting their work with children in the schools (ASHA, 2018). This inconsistency may indicate that SLPs lack awareness of knowledge and skills needed to provide feeding interventions, specifically Sensory Food Aversions. This lack of awareness further emphasizes the need for increased educational training on Sensory Food Aversions.

Perceived Skills to Provide Intervention for Sensory Food Aversions in the Schools. *Research Question 2: What self-perceived skills do Speech-Language Pathologists in the schools have to provide intervention for Sensory Food Aversions in children?*

Respondent's confidence in working with children with Sensory Food Aversions varied. Pearson's Correlation Coefficient results suggest notable differences in the perceived skills of SLPs with more training compared to those with less training, as respondents with more training displayed increased confidence in skills. Findings suggest that the majority of SLP respondents are "somewhat" confident in recognizing the signs and symptoms of Sensory Food Aversions and collaborating with service delivery professionals when working with children with Sensory

Food Aversions. However, the majority of SLPs are "lacking" in confidence in assessing feeding disorders, determining an appropriate intervention plan, and providing intervention for children with Sensory Food Aversions. A majority of SLPs are at least "sometimes" incorporating sensory-activities while targeting speech-language goals. This indicates that SLP respondents may view sensory activities as meaningful strategies in intervention.

These findings suggest SLP respondents lack skills needed to provide services for children with Sensory Food Aversions and continues to reinforce the need for additional training. Results also indicate that as SLPs receive more training, they are more confident in their skills to work with children with Sensory Food Aversions. In the school setting, this training may be offered during in-services and could initially focus on expanding and understanding the use of sensory activities as suggested by Anderson (2018).

Perceived Knowledge of Effects of Nutritional Deficiencies on Academic Performance. *Research Question 3: What self-perceived knowledge do Speech-Language Pathologists in the schools have about the effects of nutritional deficiencies on academic performance?*

SLPs reported being at least "somewhat" familiar with the impact of Sensory Food Aversions on nutritional deficiencies and the impact of nutritional deficiencies on academic performance. However, a common theme in regard to barriers to treating Sensory Food Aversions was the lack of an "academic impact". Eight comments were provided related to the lack of educational impact of Sensory Food Aversions. A discrepancy was noted between respondent's answers to the impact of nutritional deficiencies verses the respondent's comments about nutritional deficiencies. Thus, it could be that the use of the word "familiarity" was too vague to clearly measure the respondents understanding of nutritional deficiencies and the impact of those deficiencies on academic performance.

These findings suggest that although respondents reported being familiar with the nutritional impact in their responses to questions 19 and 20, comments provided in the open-ended questions suggest a lack of knowledge in the weight of the impact of nutritional deficiencies as identified in the literature (Black & Zablotsky, 2018; Bryant-Waugh et al., 2010; Twachtman-Reilly et al., 2008). Therefore, it is suggested that educational training related to the nutritional impact of feeding disorders on academic performance should be incorporated into in-service trainings on Sensory Food Aversions. As suggested by Homer (2009), team trainings including the SLP, nutritionist, cafeteria manager, school nurse, and/or classroom teacher should be provided to enhance service delivery for this population and address their nutritional needs.

Access to Resources in the School and Community. *Research Question 4: Do Speech-Language Pathologists in the schools have access to resources in the community to meet the needs of children with Sensory Food Aversions?*

Discussion of access to resources in the school and community is presented according to three related yet individual components. These components include feeding teams, collaboration, and feeding clinics. In regard to resources of school-based feeding teams, a majority of respondents reported school districts do not consider Sensory Food Aversions in the SLP's scope of practice, while the majority of schools that do consider Sensory Food Aversions in the SLP's scope of practice do not provide guidelines for intervention. Additionally, the majority of SLPs reported no feeding team at their school. Based on responses of SLPs with school-based feeding teams, the majority treat both pediatric dysphagia and Sensory Food Aversions. The most common members of a school-based feeding team include the SLP, school-based Occupational Therapist, and school nurse.

In terms of collaboration, SLPs reported minimal collaboration with a school or community-based nutritionist, as well as minimal collaboration with community-based professionals. Results are in conflict to the recommendations by Homer (2009) in which collaboration between the school-based feeding teams and members of community-based feeding clinics is best preferred. The majority of SLPs reported most frequent collaboration with the school-based Occupational Therapist, and collaboration with additional school personnel as needed. These results are again in conflict with the guidelines provided in the literature, as Homer (2009) recommends that school-based feeding teams should consist of the SLP, nurse, classroom teacher, classroom assistant, school administrator, occupational therapist, physical therapist, cafeteria manger, social working and/or the parents/caregiver in order to include a variety of expertise. These results suggest that recommended collaborative practice for Sensory Food Aversions is not being provided by a majority of SLP respondents.

In regard to the prevalence of community-based feeding clinics, the majority of SLPs reported there is a community-based feeding clinic within a reasonable travel distance from the school that provides treatment of Sensory Food Aversions, while others were unaware of whether a community-based feeding clinic was within a reasonable distance. Additionally, the majority of SLPs suspected they have children on their caseload who would benefit from receiving services, however the majority of SLPs have not made a referral to a community-based feeding clinic. A common theme regarding referrals arose in the challenges/barriers. SLP respondents reported inability to refer children for outside services as the financial responsibility falls on the school system. This leads to a gap in providing services at school as well as a gap in referring children to outside therapies needed to address feeding challenges. This places children with Sensory Food Aversions at risk of receiving no services.

Results indicated that procedures and policies need to be developed for making appropriate referrals. School systems should develop a network with available resources in the community or strategies for developing connections. Resources should be developed which establish relationships within the feeding community and develop committees that bridge relationships between the school-based SLP and community-based services. Additionally, improved advocacy with the Department of Education is warranted to clarify and expand the SLP's scope of practice within the schools.

Limitations. There are some limitations to the current study, including sample size, sample profile, questionnaire content, low response rate to a specific question, and dearth in the literature regarding Sensory Food Aversions in children in the schools. Each of these limitations will be described and their impact on the results of the study will be discussed.

In terms of sample size, 79 respondents could be recruited from various online school-based SLP groups. ASHA estimates there are approximately 89,788 SLPs working in the schools (add reference from ASHA annual demographic & employment data). An increased number of respondents and/or ability to access respondents would improve representation of SLPs working in the schools and likely provide additional information to answer the research questions.

In terms of sample profile, it may be likely that SLPs who show a particular interest in Sensory Food Aversions participated in the study, as SLPs volunteered their time in participation. Therefore, it is possible that SLPs who were more knowledgeable or interested in the topic of Sensory Food Aversions chose to participate. If SLPs who were not drawn to the study participated, the findings may have indicated a greater number of SLPs lacking knowledge and skills regarding Sensory Food Aversions. Therefore, an increased sample size is

recommended to assess the perceived knowledge, skills, and access to resources of additional school-based SLPs.

In terms of the questionnaire content, during the data analysis the researcher recognized that the questions surveying "familiarity" were too vague, such as questions related to familiarity of Sensory Food Aversions and familiarity of nutritional deficiencies. More precise questions could have been used in order to adequately assess degree of familiarity and knowledge. If terminology was more concrete, the results could have given more feedback regarding exact knowledge and/or the degrees of knowledge on the topic of Sensory Food Aversions. In addition to the quality of the questions, additional questions related directly to SLP's knowledge could have been included in order to obtain further information. Questions regarding the prevalence of feeding teams were included in the questionnaire, however the study would have benefited from including a direct question regarding whether the respondents currently provide services for children with Sensory Food Aversions.

An additional limitation included the low response rate of question six (i.e., How many children diagnosed with Sensory Food Aversions do you estimate you have on your caseload?), with only *n=41* respondents. It is unknown whether this is due to a logistical malfunction (i.e., only respondents who participated in question 4 were provided the opportunity to complete question six) or whether respondents were more likely to skip the question due to the required reflection. If more respondents had participated in question 6, the results may have yielded a different average of children on SLPs caseloads with Sensory Food Aversions.

Lastly, there is a dearth in the literature regarding the current topic. Therefore, the survey was developed based on Sensory Food Aversions, ARFID, and the presence of feeding clinics and could not be compared to previous research as this is the first exploration of the topic. If

previous research were available, it would be valuable to compare the results of this study to previous research in order to compare findings.

Clinical Implications. Four implications for clinical practice were identified. These include: (1) Increased SLP training and education about Sensory Food Aversions, (2) Increased networking and collaboration with school-based and community-based service delivery professionals, (3) Increased referral practices when school-based services cannot be provided or when the child would benefit from additional services, and (4) Increased advocacy for school-based services.

The first clinical implication addresses SLP training and education. The need for increased SLP training is necessary as results of the study indicated the two most frequent types of training SLP respondents have received on the topic of Sensory Food Aversions include "self-study" and "none". In addition to lack of training, a common barrier that emerged from thematic analysis was respondent's lack of knowledge on Sensory Food Aversions. Therefore, additional education and training is recommended for SLPs in order to provide best practice, as ASHA identifies feeding disorders in an SLP's scope of practice (ASHA, 2016) and ASHA's *Code of Ethics* states that SLPs must be competent on the topic in order to provide services (ASHA, 2016). Additional training on Sensory Food Aversions will result in greater clinical skills to assess and provide services for children with sensory-food aversion. In addition, the results of the study indicate that knowledge on the academic impact of nutritional deficiencies needs to be highlighted. This knowledge could be embedded within training on Sensory Food Aversions, increasing the necessity of addressing Sensory Food Aversions in the schools.

School-based SLPs are confronted by barriers in performing their responsibilities, such as time, staffing, and school policy. If educational opportunities on Sensory Food Aversions are

available to SLPs, they will be more equipped to overcome barriers to treating Sensory Food Aversions. This may include incorporating sensory activities and feeding themes if these children already receive speech/language services (Anderson, 2018). Findings from the current study suggest a majority of SLP respondents (*n*=75) are currently incorporating sensory-activities during speech-language intervention. Thus, if respondents are incorporating sensory activities, it would be beneficial to tailor them toward food awareness. Increased education and training on Sensory Food Aversions will allow SLPs to address challenges and barriers in order to provide services for children with Sensory Food Aversions.

The second clinical implication addresses collaboration. The ASHA *Code of Ethics* states that interprofessional collaboration should be utilized to ensure that quality services are provided (ASHA, 2016). Results of the current study are consistent with results of *A National Survey of Speech-Language Pathologists' Engagement in Interprofessional Collaborative Practice in Schools: Identifying Predictive Factors and Barriers to Implementation* (Pfeiffer et al., 2019), suggesting a need for increased collaboration and that school-based SLPs and other professionals could benefit from additional education on interprofessional practice in order to improve outcomes for students. As suggested by Arvedson and Homer (2006), Homer (2008), and Jung et al. (2016), working with additional professionals will enhance intervention outcomes as each member contributes their area of expertise. When additional service-delivery professionals have the knowledge and skills to address the needs of Sensory Food Aversions, they are able to target these needs during varied interactions with the child (i.e., academic time, related arts, occupational therapy, physical therapy, school lunch). The more these needs are addressed, the more likely intervention will result in generalization (i.e., eating healthier foods at home, appropriate mealtimes with families) and enhance the child's nutritional status.

The third clinical implication addresses the referral practices of school-based SLPs, as the current study identified a gap in referrals to community-based feeding clinics. As described in the ASHA *Code of Ethics,* when SLPs do not have adequate training in a service area and additional community-based services are rendered, it is the SLP's role to refer the child (ASHA, 2014). In order to refer, SLPs must have the skills to identify children with Sensory Food Aversions who need services, as well as be aware of the resources in the community to send referrals. Means for identifying and referring children with Sensory Food Aversions could be established through networks within the community, connecting school-based professionals to community-based professionals (i.e., Nutritionists, Community-based Feeding Clinics, Parent Support Groups) as suggested by Homer (2009).

The fourth clinical implication addresses advocacy and further supports all other implications. ASHA (2014) defines the use of advocacy to "educate, inform, and persuade others" in order to support SLP issues. Advocacy skills are necessary to meet the needs of children with Sensory Food Aversions. Increased education and training on Sensory Food Aversions will result in greater advocacy skills. ASHA provides how to advocate for change in the *Practice Portal,* where they describe that "accountability, communication, collaboration, flexibility, perseverance, and patience" are keys to successful advocacy (ASHA, 2014). As identified as a role in the ASHA *Code of Ethics*, SLPs "honor their responsibility to the public" when advocating for the unmet feeding needs of these children (ASHA, 2016, p. 7). Findings from the current study suggest a need for school-based SLPs to advocate for feeding services and the impact nutritional deficiencies may have on academic development in order to provide services at school and enhance collaboration between professionals. As identified in the *ASHA*

SLP Scope of Practice, "advocating for fair and equitable services for all individuals, especially the most vulnerable" is a recommended role of an SLP (ASHA, 2016, p. 18).

Recommendations for Future Research. The results of this study gave rise to four topics that need to be addressed in future research. It is recommended that future research explores the following: (1) Specific referral practices of SLPs to community-based feeding teams, (2) Differentiation between intervention for Pediatric Dysphagia and Sensory Food Aversions in the schools, (3) Regulations for school-based team care in providing services for children with Sensory Food Aversions, and (4) The SLP's role of advocacy for feeding intervention in the schools. Justification for how the recommendations above will contribute to the field of Speech-Language Pathology and ultimately impact children with Sensory Food Aversions are described below.

The first research recommendation addresses the referral practices of school-based SLPs to community-based feeding teams. As identified in the *ASHA Code of Ethics* (ASHA, 2014) and described by D'Angelo (2018), it is the responsibility and role of the SLP to refer children to community-based feeding clinics when needed. Further research on the referral practices of SLP's to feeding teams will provide insight toward the current practices of SLPs and their extent of collaboration with community-based feeding clinics. The referral practices may shed light on the challenges/barriers SLPs face to referring to community-based feeding clinics in order to provide a foundation for moving forward in closing the gap found in the current study regarding referral practices.

The second research recommendation addresses identifying the differences between Pediatric Dysphagia and Sensory Food Aversions. ASHA defines Pediatric Dysphagia as a swallowing disorder that can occur in any of the four phases of the swallow (ASHA, 2014). The

Pediatric Dysphagia Practice Portal (2014) identifies pediatric feeding disorders (such as ARFID), and Dysphagia (swallowing disorders) as two separate service areas SLPs are responsible for serving. However, according to the *ASHA Schools Survey Report: SLP Caseload Characteristics Trends, 2000-2018* (ASHA, 2020), they do not distinguish between feeding disorders and dysphagia when surveying the areas of intervention for children on SLP caseloads. This grouping implies that intervention approaches are the same for children with Sensory Food Aversions and Dysphagia. Though they may occasionally overlap, children receiving intervention for Sensory Food Aversions typically are at less risk for medically related repercussions, such as chocking and aspiration (ASHA, 2014). Further research on this topic may allow ASHA and school systems to identify Sensory Food Aversions as a separate area of eligibility and bring awareness to providing intervention for Sensory Food Aversions in the school-based setting to meet the needs of these children.

The third research recommendation addresses providing guidelines for team-based care in the evaluation and treatment of children specifically with Sensory Food Aversions in the school setting. Current literature regarding the implementation of a school-based feeding teams focuses on pediatric dysphagia (Arvedson & Homer, 2006; D'Angelo, 2018). While Sensory Food Aversions are a manifestation of an ARFID diagnosis opposed to a swallowing disorder, intervention approaches to these two disorders differ. Differentiating between the two areas of service deliver implies two different plans of care. Research exploring the regulations for team-based care in providing services for children with Sensory Food Aversions in the schools will make implementation easier for school-based SLPs and increase the likelihood of meeting the needs of children with Sensory Food Aversions.

The fourth research recommendation address the role of advocacy as a school-based SLP. Research exploring the role of advocacy as a school-based SLP is warranted to provide SLPs with a foundation on how to develop serving children with feeding challenges at their school. Although ASHA provides general guidelines for conducting advocacy and developing an action plan in the *Practice Portal for Advocating for Change* (ASHA, 2014), more research on how to do this specifically in the school-based setting would benefit SLPs and make it easier to take on this role. Increased advocacy on the need for feeding services in the schools is warranted to meet the need of children with Sensory Food Aversions and address their potential nutritional deficiencies impacting academic performance.

Conclusions

This research suggests a lack of knowledge and services to meet the needs of children with Sensory Food Aversions. Many barriers were noted related to providing services for feeding in the schools, while referrals to community-based feeding clinics were slim. This gap leads to the question: Who is providing services for these children? Data from the *ASHA Percentage of School-Based SLPs Treating Students By Area of Intervention and Year* (ASHA, 2020) identifies a decrease in providing feeding intervention in the schools despite the literature supporting the need for school-based feeding services (Arvedson & Homer, 2006; ASHA, 2014; Homer & Faust, 2017) and the literature suggesting an increase of children with feeding disorders (Davis et al., 2010; Kerzner et al., 2015; Kleinert, 2017; Lau, 2016; Rawool, 2017; Sharp et al., 2014). These finding suggest there have been minimal changes in the schools addressing the needs of children with feeding difficulties since 2004.

The field of Speech-Language Pathology is dynamic and the populations SLPs serve are continuously changing. Children with Sensory Food Aversions as a result of ARFID are a

growing population that necessitates pre- and post-graduation training. If SLPs are not identifying these children as they come through the schools, they may slip through the cracks, leading to potential lifelong health defects related to nutritional deficiency and pragmatic deficits across social functions involving food. The issue arises that although there is reason to suggest a gap in education and training on Sensory Food Aversions, there may be a lack of awareness of this gap, indicating that school-based SLPs are not aware of the prevalence of Sensory Food Aversions. Increased education and training on Sensory Food Aversions will be unattainable until the *need* for this education and training is brought to light. This research serves as a steppingstone to bring awareness to SLP respondent's lack of perceived knowledge and skills regarding Sensory Food Aversions and demonstrates the need for increased collaboration and referral practices to community-based feeding clinics.

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APPENDIX

Survey titled "School-Based Speech-Language Pathologist's Perceptions of Sensory Food Aversions in Children"

1. Are you familiar with the term "Sensory Food Aversions" related to children with feeding difficulties?
    a. No
    b. Somewhat
    c. Yes

If no, skip to question 3

2. What type of training have you received on Sensory Food Aversions in children? (Check all that apply)

o	Undergraduate course
o	Graduate course
o	In-service training
o	Self-study
o	Positive Eating Program (PEP)
o	SOS (Sequential-Oral-Sensory) Approach
o	Food Chaining©
o	None
o	Other (please specify)

3. Do you have children on your caseload with feeding disorders?
    a. No
    b. Unsure
    c. Yes

4. A sensory-food aversion is a type of feeding disorder defined as refusal to eat certain foods due to their relation to taste, texture, temperature, smell, and/or appearance. These are often associated with sensory-processing difficulties and can be referred to as selective-food refusal (Chatoor, 2009; Chistol et al., 2018). Knowing this, do you suspect you have children on your caseload with sensory-food disorders?
    o No
    o Unsure

- Yes

If no, skip to 6

5. If yes, how many children diagnosed with Sensory Food Aversions do you estimate you have on your caseload?
    a. 1-4
    b. 5-9
    c. 10-14
    d. 15+

6. Does your school system consider Sensory Food Aversions in your scope of services within the school?
    a. No
    b. Unsure
    c. Yes

If no, skip to 8

7. If yes, does your school system have guidelines on providing services to children with feeding disorders?
    a. No
    b. Yes
    c. Unsure

8. If no, do you feel it would be beneficial to provide intervention for Sensory Food Aversions in the school setting?
    a. No
    b. Yes
    c. Undecided

9. When providing intervention for children with speech and language disorders, do you incorporate sensory activities?
    a. No
    b. Sometimes
    c. Yes

If no, skip to 11

10. If yes or sometimes, for what purpose? (check all that apply)
    a. To improve child's attention
    b. To encourage language production
    c. Other (please specify)

11. Please rate your confidence in your abilities in the following areas of service delivery:

Area of Service Delivery	Very Confident	Somewhat Confident	Neutral	Lacking in Confidence	No Confidence

Recognizing the signs and symptoms of Sensory Food Aversions	○	○	○	○	○
Administering checklists or assessments for children with suspected Sensory Food Aversions	○	○	○	○	○
Determining appropriate intervention goals and outcomes for children with Sensory Food Aversions	○	○	○	○	○
Providing intervention to target Sensory Food Aversions	○	○	○	○	○
Collaborating with other service delivery professionals (e.g., OT, Nutritionist, Psychologist) regarding the needs of children with Sensory Food Aversions	○	○	○	○	○

12. Does your school have a feeding team?
    a. No
    b. Yes

If no, skip to 15

13. If yes, who are the members of your feeding team? (check all that apply)

Team Member	School-Based	Community-Based
Nutritionist	○	○
Occupational Therapist	○	○
Nurse	○	○
Speech-Language Pathologist	○	○
Social Worker	○	○
Psychologist	○	○
Other (please specify)	○	○

14. What cases does your school-based feeding team treat?
    a. Food aversions
    b. Pediatric Dysphagia
    c. Both

15. To what extent do you collaborate with the following individuals to discuss the needs of children on your caseload with Sensory Food Aversions:

	Daily	Weekly	Monthly	As Needed	During IEP Meetings	Never
School-based Nutritionist	○	○	○	○	○	○
School-based Occupational Therapist	○	○	○	○	○	○

School-based Nurse	○	○	○	○	○	○
School-based Psychologist	○	○	○	○	○	○
Community-based Nutritionist	○	○	○	○	○	○
Community-based Occupational Therapist	○	○	○	○	○	○
Community-based Nurse	○	○	○	○	○	○
Community-based Psychologist	○	○	○	○	○	○
Other (Please specify)	○	○	○	○	○	○

16. Is there a pediatric feeding clinic that provides treatment for feeding disorders within a reasonable travel distance from your school?
    a. No
    b. Unsure
    c. Yes

17. Have you referred a child on your caseload to a pediatric feeding clinic for concerns of feeding disorder?
    a. No
    b. Yes

18. Are there children on your caseload who would benefit from feeding services at an outside clinic for the treatment of sensory-based food aversions?
    a. No
    b. Unsure
    a. Yes

19. Are you familiar with the impact of feeding disorders on nutritional deficiencies?
    a. No
    b. Somewhat
    c. Yes

20. Are you familiar with the impact of nutritional deficiencies on learning?
    a. No
    b. Somewhat
    c. Yes

Demographics:

21. What is your employment status as a Speech-Language Pathologist?
    a. Full-time
    b. Part-time

22. Years of experience as a Speech Language Pathologist in the school setting
    a. 0-4 years

b. 5-9 years
c. 10-14 years
d. 15-20 years
e. 21 years and longer

23. What is your average caseload size?
    - Fewer than 25
    b. 26-50
    c. 51-75
    d. 75+

24. What is the school context in which you are employed? Please check all that apply:
    a. Pre-K
    b. Kindergarten
    c. Elementary School
    d. Middle School
    e. High School

25. In what region of the U.S are you based?
    a. Southeast
    b. Northeast
    c. Midwest
    d. Southwest
    e. West

26. What best describes your location?
    a. Rural
    b. Suburban
    c. Urban

27. Would you be interested in information on providing intervention to children with Sensory Food Aversions?
    a. No
    b. Unsure
    c. Yes

28. Do you have additional thoughts on the benefits of treating Sensory Food Aversions with children on your caseload that you would like to share?

29. Do you have additional thoughts on the challenges and barriers of treating Sensory Food Aversions with children on your caseload that you would like to share?

Thank you for your time in participating in this survey.

VITA

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