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HOW TEACHERS OF STUDENTS WITH VISUAL IMPAIRMENT SUPPORT THE LANGUAGE LEARNING OF YOUNG CHILDREN WITH VISUAL IMPAIRMENT AND DEVELOPMENTAL DISABILITIES: A MULTIPLE CASE STUDY

By

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ABSTRACT

More than half of the students with visual impairment (VI) have an additional developmental disability (DD) in the United States. Young children with VI and DD are at risk for language delay and these children need planned learning experiences to increase their language skills. Teachers of students with VI (TVI) have received training and special certification to address the educational needs of students with VI from birth to 22 years old. Despite the importance of addressing language in the preschool years, the VI literature has little research on instruction to support the language development of young children with VI and DD. The purpose of this research was to provide an in-depth understanding of how TVIs describe their role in supporting the language development of young children with VI and DD, how they address language in their instruction, and how confident they are in their ability to impact language skills. Seven TVIs attended the interviews, completed surveys (e.g., demographics and self-efficacy), and provided examples of educational artifacts from their classrooms. Data analysis showed that although TVIs employ a variety of educational strategies supported in the DD literature, instruction was not clearly systematic, and they reported the need for additional training to enhance language development. TVIs who have a graduate level of training in early childhood development reported feeling more self-confident in their ability to influence language compared to TVIs without advanced training in early childhood.

CHAPTER ONE

INTRODUCTION

Around 93,600 children with visual impairment (VI) receive special education services in the United States, and 54% of the children (50,100) have at least one developmental disability (DD) besides VI except for deafblindness (Mason & Davidson, 2000). Having a DD places children with VI at greater risk for a language delay or impairment (Chen & Dote-Kwan, 1995). Although children with VI without DD develop language at a slower rate (McConachie, 1990), their language skills generally approach those of their typically developing peers (Pérez-Pereira, 1994). Children with VI and DD often experience challenges with language after they enter school (Pizzo & Bruce, 2010). They may struggle to obtain visual information from their surroundings, and their additional disability can affect all aspects of language, such as vocabulary learning and approximations (Trief, 2007). It is essential that children with VI and DD receive early intervention to address language acquisition because they are at risk for language delay (Mosca et al., 2015). Children with VI represent an understudied population with little to guide teachers on how best to facilitate language development. Recent research showed that practicing teachers of students with visual impairment (TVI) do not feel adequately trained to work with young children with VI and VI and DD (Ely & Ostrosky, 2017; Ely et al., 2020). More information is needed to understand what TVIs are currently doing to promote and support the language skills of young children with VI and DD in their classrooms.

In this chapter, the author will review the literature on the definition, prevalence, and impact of VI with and without DD on children's holistic development. Next, typical and atypical language development will be reviewed. The literature on interventions to support language development and the roles and responsibilities of TVI will be discussed. This review will reveal

a gap in the literature dedicated to understanding how to best target language skills of children with VI and DD in educational settings.

The Definition and Prevalence of Visual Impairment

Visual impairment (VI) refers to people with blindness or vision loss that cannot be corrected with prescription glasses or contact lenses. The term includes both low vision (i.e., partial sight) and total blindness. Individuals are considered legally blind in the United States if they have a visual acuity of 20/200 or worse in the better eye with the use of corrective lenses or their visual field is no greater than 20 degrees in the better eye (42 U.S. Code § 1382c). There is not one widely agreed upon low vision definition, and in the United States, no legal definition has been created (Corn & Erin, 2010). Many of the efforts to describe low vision are based on clinical criteria, but they do not provide a precise account of how much vision a person has or how visually they perform (Corn & Erin, 2010). The functional definition of low vision refers to a person who has an uncorrectable VI with some residual vision that has a negative impact on participation and independence in daily activities (Massof & Lidoff, 2001).

Eligibility for VI education services may differ from state to state. Some states have a broader definition than the current definition in the Individuals with Disabilities Education Act (2004), but state definitions must not have a narrower definition than IDEA (Ryder, 2017). According to IDEA, a student is eligible for VI services if the impairment after correction negatively affects a child's educational performance. The Florida Department of Education (2017) broadens the definition to provide educational services for students who have a progressive visual condition that may affect a child's educational performance in the future.

In 2015, more than 174,000 preschool children, three to five years of age, in the United States (US) were diagnosed with some degree of VI (Varma et al., 2017). Approximately 69% of

these US cases were caused by uncorrected refractive error, and 25% were due to bilateral amblyopia (Varma et al., 2017), which is abnormal visual development and can be corrected by glasses or contact lenses (Wallace et al., 2007). According to Hatton et al. (2013), across 28 states, approximately 5,931 young children three years of age had severe uncorrectable VI that included cortical VI, retinopathy of prematurity, and optic nerve hypoplasia.

IDEA (2004) requires schools to find and assess students who may have disabilities at no cost to parents. According to the latest U.S. Department of Education (2019) statistics, 27,000 children ages 3 to 21 received educational services under the category of visual impairment in the 2017-2018 school year. The actual number of young children with VI is higher, as some students with VI have additional disabilities and receive services under the categories of multiple disabilities or deafblindness.

The Development of Children with Visual Impairment

It has been long accepted that language learning depends on social interactions (Mundy et al., 1983), but recent research has shown that language may also rely on domain-general cognitive processes (Bloom, 1993; Rose et al., 2009). In this view, language is recognized as drawing on a set of processes shared with multiple aspects of cognition, such as attention, learning, and memory of language skills (Cowan et al., 1999; Fernald et al., 2006). Children also learn words when paired with observational information (Arunachalam & Waxman, 2010). For example, children learn new verbs and nouns quickly when they engage in an activity or, with an item, as they pair what is observed with linguistic information (Piccin & Waxman, 2007).

Cognitive Development

Cognitive development refers to the development of thought processes, such as attention, memory, problem-solving, perspective-taking, and decision-making. Children's cognition is

developed, in part, through interactions with the environment and continues through adulthood (Piaget, 1960). Children with VI follow similar cognitive developmental stages as sighted children; however, their developmental process is typically delayed (Stephens & Grube, 1982). Additionally, the severity of VI can make a marked difference in cognitive development because children with low vision may be more stimulated than children with blindness to interact with people and objects, which promotes cognitive development (Hatton et al., 1997).

Several studies have demonstrated delays in specific cognitive skills among children with VI. For example, children with VI may experience a two-year delay in conservation (i.e., an ability to understand that objects stay the same in quantity, even if their shape is changed (Tobin, 1972) and categorization skills (Friedman & Pasnak, 1973). Sighted children's understanding that others' visual perspectives may differ from their own starts at age two or three (Masangkay et al., 1974). Whereas children with blindness develop some understanding of this perspective taking by the age of five (Bigelow, 1988), they are still confused about the effects of orientation and the conditions under which a person may see or not see objects (Bigelow, 1992). This confusion may be due to a lack of experiences with concepts and items during early childhood, which may be considered akin to experiential deprivation. Explicit instructions and hands-on experiences with items may increase children's understanding of items, shapes, and how other people may or may not see objects. Warren (1984) observed that children with VI showed less interest in toys and playing, and their creativity performance was judged to be lower than their sighted peers. Such play behaviors of children with VI are likely influenced by cognitive skills, which are impacted as a result of experiential deprivation (Parsons, 1986; Rettig, 1994).

Research indicates multiple opportunities for hands-on exploration of objects are vital to the concept and cognitive development of children with VI. For example, frequent play sessions

with tactile objects and cueing students to recall these objects' spatial positions increased children's performance on spatial tasks similar to their sighted peers (Millar, 1975). Stephens and Grube (1982) used the Piagetian assessment of cognitive development (adapted for children with blindness) to determine whether children with VI who participated in cognitive reasoning activities at a level appropriate to their age increase their reasoning at a level equivalent to sighted children in the comparison group. After the intervention, the experimental group demonstrated 14 out of 17 reasoning tasks at a performance level similar to the comparison group. Of the three tasks that learners with VI did not reach a performance level similar to children with sight, two involved spatial relations (e.g., rotation of squares and changing perspectives) and one involved abstract operation (e.g., transfer from two to three dimensions). Therefore, interventions as simple as play sessions with tactile objects may increase the cognitive reasoning development of children with VI.

Similarly, Anderson (1984) asked 10 children with congenital blindness and a matching group of 10 sighted children to describe objects from memory after tactual exploration. The researcher found that the mental images or object concepts of children with congenital blindness were built upon direct experiences with objects. Furthermore, Groenveld and Jan (1992) found that children with total blindness formed language based on new concepts without direct experience by making connections to previously formed concepts, but their newly formed concepts were inaccurate or fragmented. The researchers suggested explicit instruction, real-world tactile toys, and special play spaces to support the development of cognitive skills.

Development of Language

Communication is defined as the ways of exchanging messages, whereas language is a system of communication that depends on code (e.g., verbal, symbols). According to Turnbull

and Justice (2016), there are several stages of verbal language development. Before infants start using verbal language to communicate and speak their first words, they listen to sounds and segment speech into meaningful phrases or words. One of the obvious prelinguistic milestones of infants' language development is early vocalizations. The first sounds children utter without intentionality or control (e.g., crying, fussing, sneezing), but soon they deliberately make "cooing and gooing" sounds. This developmental stage occurs from 0 to 3 months of age. Between 3 and 8 months, children start to produce isolated vowel sounds (e.g., "ah" and "oh") and semivowel sounds (e.g., "eeey"). Children may experiment with the volume and pitch of their voice. Between 6 and 12 months of age, children start producing single consonant-vowel syllables (e.g., "da," "ba"), and canonical babbling occurs in this stage (e.g., da da da, ba da ga). By 15 months of age, children start to produce diphthongs (i.e., a combination of two vowel sounds made by gliding from one position of the mouth to another in a single syllable) such as in the words "boy" or "bear. Children use symbols between 12 and 24 months of age, but these may bear limited resemblance to the idea, place, person, activity, or thing they represent. The last stage of development typically starts at 24 months of age; children combine symbols (concrete or abstract) into two-or-three-symbol combinations (e.g., "wash hands," "me eat"), conforming to the grammatical rules in the native language (Rowland, 2011).

In infancy, children with blindness show an absence of modulated non-verbal communication, such as expression, smiling, and joint attention (Freeman et al., 1989). Later, children with VI show difficulties with initiation and conversational turn-taking; decreased initiation of social contact can lead to decreased responses from other people (Fraiberg, 1977). Children with even mild VI may have difficulty accessing or understanding facial expressions, body language, and personal space that function as important social cues (Ammerman et al.,

1986). Language-related studies on children with VI are predominantly descriptive and rely on professionals who have experiences with the assessment and education of children with VI (Goldware & Silver, 1998; Mosca et al., 2015). Even speech-language therapists may manage children with VI like a child with hearing loss because it is a sensory disability (House & Davidson, 2000). VI is a low incidence disability, and many studies in the literature have a small sample size regardless of the research design. In the following paragraphs, the author will discuss language research in VI populations under the categories of phonology, lexical development, morphology, and syntax.

Phonology

Phonology research is limited compared to other language development areas in VI literature (Pérez-Pereira & Conti-Ramsden, 1999). Children with severe VI have little access to visual information co-occurring with what they hear. Thus, they may face difficulties discriminating sounds produced with visually perceptible articulation (e.g., Pérez-Pereira & Conti-Ramsden, 1999).

Dodd (1983) observed a sighted child and a child with congenital blindness between 21 and 23 months old to determine how they produced the same 100 words. Results of the study showed that the sighted child was more likely to substitute a sound with a similar observable articulation (i.e., b instead of p), but the child with congenital blindness was more likely to substitute a sound with a different observable articulation (i.e., t instead of p). Brieland (1950) examined verbal language performance of 84 children with congenital blindness between 12 and 18 years old with a matched group of 84 sighted children. The participants listened to a story, and they retold the story ten days later. Children's use of language in terms of vocal variety, pitch modulation (i.e., in control of voice), volume, lip movement, and memory were analyzed by ten

university instructors and rated on a five-point scale. Children with congenital blindness were significantly better at pitch modulation, and sighted children were better at lip movement. Taken together, in both studies, children with congenital blindness may be able to use their voice like sighted children, but with diminished use of appropriate lip movements.

Brouwer and his colleagues (2015) conducted a teacher survey to examine the prevalence of speech-sound production (SSP) deficits in children with VI in Iowa, South Dakota, and Nebraska. The researchers only included children with typical cognition or a mild intellectual disability (N=120) to establish valid conclusions about the association between VI and SSP. More than half of the children with VI between 0 and 5 years old were receiving SSP interventions. Roughly one-third of the same age group had received SSP intervention at some point in their lives. The researchers interpreted that 84% of young children with VI have SSP deficits, and they are at risk for verbal language delays.

Lexical Development

The acquisition of words and meanings has been a controversial topic in the VI literature (Pérez-Pereira & Conti-Ramsden, 1999). Some researchers have claimed that children with blindness acquire words with different, often unreal, meanings than sighted children (Cutsford, 1951). Others have suggested that children with blindness acquire words with similar meanings as their sighted peers (Landau & Gleitman, 1985).

Landau and Gleitman (1985) conducted a study on a young child with congenital blindness to determine how she interpreted the words "look" and "see." The experiment on the word “look” showed that the child with blindness understood the word “look” as moving her hands in the direction indicated by the command rather than turning her nose or head. The experiment on the word “see” demonstrated that the child with blindness held an object in her

mother's line of sight when she was asked to "let Mommy see the car" and put the toy car in her pocket when she was asked to "make it so Mommy cannot see the car." Therefore, the child with blindness showed an understanding of differentiation between "see" and "look." Despite the Landau and Gleitman study, Bigelow (1992) found that 6 to 8-year-old children with congenital blindness showed difficulties in making inferences regarding whether a person can see an object when there were barriers between the target object and the person. Thus, children with congenital blindness may have difficulty understanding distance and space between two objects, but they may use the word "see" correctly in familiar contexts.

Andersen and her colleagues (1984) examined early lexical acquisition (i.e., acquisition of vocabulary) and verbal role-play in six toddlers with varying degrees of VI. The researchers found that children with VI were less likely to generalize the use of words (i.e., transfer use of words between contexts) that describe visual attributes of their environment and were frequently observed to engage in verbal play behavior (e.g., repeating overheard conversations), which was largely dissociated from their engagement with toys. Reduced or absence of vision is likely to reduce children's opportunities to generalize words to other contexts. However, it does not mean they lack the ability to decontextualize words. Norgate (1996) suggested that generalization by children with congenital blindness may be underestimated because generalization depends on making connections with suitable referents, but children with blindness face great difficulties establishing joint attention, making it more challenging to be sure of the references of these children. Therefore, children with VI face challenges in making connections between contexts and their learned words; they may need explicit instruction to use words in multiple contexts with the same referents.

Morphology and Syntax Development

The development of syntax in children with blindness is delayed due to limited or lack of vision compared to sighted children (Pérez-Pereira & Conti-Ramsden, 1999). Fraiberg (1977) found that children with blindness started producing two-word combinations later than their sighted peers, and these syntactic delays were experienced due to lack of vision; however, the deficit disappeared at the age of 3 years. Therefore, delays in sentence growth can be temporary for young children with blindness. Other researchers supported this argument and hypothesized that the lack of visual information affects children's cognitive development and their comprehension of reality (Andersen et al., 1993; Dunlea, 1989). However, Landau and Gleitman (1985) discussed that syntactic development is relatively independent of cognitive development; the idea of lack of independent mostly belongs to nativist language theorists (Bloom, 1993). Nativist theorists argue that children are born with an innate ability to organize laws of language, and they have specific language abilities (Litchfield & Lambert, 2011). Therefore, it may be reasonable to assume that children with blindness show a syntactic development similar to typically developing children.

Increases in children's mean length of utterances (MLU) is acknowledged as morphosyntactic development of language (i.e., growth in sentence formation and language rules; Pérez-Pereira & Ramsden, 1999). Landau and Gleitman (1985) examined the growth in MLU for children with blindness and compared their results to previous MLU studies on sighted children (e.g., Bloom et al., 1975; Brown, 1973). Landau and Gleitman measured MLU in three children with blindness between 18 and 42 months of age for six months. For the first few measures, these children showed delays in their MLU measures, but by the age of three, they obtained similar scores to the sighted children in previous studies.

Erin (1986) conducted a study to investigate the use of questions by three groups of children: children with blindness, children with low vision, and sighted children. Each group had 12 participants between the ages of 4 and 10 years old. The study results showed that Wh-questions were the most frequently used type of questions, and both children with low vision (49%) and blindness (48.6%) produced a higher percentage of questions compared to the sighted group (36.9%). Children with VI used Wh- questions to acquire information about the external world. Wh- questions are used for finding content information regarding people, facts, objects, etc. Therefore, children with VI use their language to compensate for their limited vision, which may suggest a need for explicit instruction of concepts, objects, or nonverbal body language.

Conclusion

In conclusion, the MLU of children with VI can reach their typical peers' development. However, they struggle with decontextualizing words and ask significantly more Wh- questions about their environment than their sighted peers, which suggests a need for explicit instruction of words and concepts in their typical surroundings. These children are at risk for delays in language development with the incorrect use of words because their understanding of everyday concepts is inaccurate and fragmented (Groenveld, 1990). This literature review suggests that children with VI need to learn ways in which to compensate for their VI and/or learn to get the maximum benefit from their remaining vision in order to develop meaningful language skills.

The Definition and Prevalence of Visual Impairment and Developmental Disability

The term multiple disabilities refers to a person who has one or more significant impairments, which cannot be accommodated under a single disability category (IDEA, 2004). Children with deafblindness have simultaneous hearing and visual impairment, need accommodations from both vision and hearing services and need significantly different

educational support than either a student with VI or a student with hearing impairment (Aitken, 2013). According to IDEA (2004), children with deafblindness are excluded from the category of multiple disabilities. To refer to a person who has one or more significant impairments including VI, the term visual impairment (VI) and developmental disability (DD) is used, but students who are deafblind may require different interventions (Aitken, 2013), and therefore are excluded from the definition of VI and DD for purposes of this research.

Given that the precise number of U.S. students with VI is unknown, the precise number of students with VI and DD is also unknown. Nevertheless, the incidence of additional disabilities among students with VI has been reported consistently as the majority. For example, Sacks (1998) claimed that teachers of students with visual impairment report approximately 50% of their students with VI have an additional disability. McMahon (2014) compared the incidence of multiple disabilities in schools for the blind and found that while enrollment levels were very similar, the incidence of additional disabilities increased from 58% to 64% between 1994 and 2014. The results showed a substantial increase in the number of children with VI and additional disabilities who were attending specialized schools. Kancherla and his colleagues (2013) estimated the prevalence of VI as 1.2 for every 1000 young children in Atlanta from 2000 to 2008, 63% of whom had at least one additional developmental disability, such as autism spectrum disorder (ASD), cerebral palsy, intellectual disability, and hearing loss. These comorbid conditions have an additional impact on language development.

The Development of Children with Visual Impairment and Developmental Disability

Developmental disability (DD) is a long-term disability that occurs before age 22 and affects cognitive and physical development or both. Young children are often labeled as DD as opposed to having an intellectual disability or ASD. Children who have VI and DD can have a

range of cognitive, social, emotional, and physical impairments. Some of these children lack opportunities to observe and imitate others, have difficulty generalizing from one setting/situation to another, and are delayed in language development (Westling et al., 2000). Despite the evidence of challenges associated with VI and DD, there is a paucity of literature on the education of these children.

Intellectual Disability

The most common genetic and inherited causes of intellectual disability (ID) in the United States, respectively, are Down syndrome (Parker et al., 2010) and Fragile X syndrome (Coffee et al., 2009). IDEA (2004) defines intellectual disability as "significantly subaverage general intellectual functioning, existing concurrently with deficits in adaptive behavior and manifest during the developmental period (p. 300.8)." ID has a negative impact on the development of language and communication, social, and independent living skills (Evenhuis et al., 2009), and typically results in delayed attainment of several milestones (e.g., cognition, motor coordination, social interaction, and adaptive skills; Rintala & Loovis, 2013). Similar to children with VI, children with ID struggle learning incidental information, and they need explicit instruction to learn to retrieve complex information (Witt et al., 2013). Both children with ID and VI were found to be less motivated to explore their surroundings, experienced delayed social skills, and attained several milestones later than their peers (Witt et al., 2013). A combination of VI and ID may lead to fewer opportunities for incidental and independent learning, which suggests that considering their unique differences, these children may require more intensive approaches to support their development.

One of the first signs of ID is delayed language development (Paul et al., 2018). It has been estimated that roughly 25% of children with ID have verbal language impairments (Miller

& Chapman, 1984). Loveall et al. (2016) compared the percentage correct of noun, verb, and attribute items between 29 individuals with ID (10-21 years old) and 29 typically developing children (4-9 years old) when overall receptive language ability and phonological memory were held constant. The results showed that children with ID had superior verb knowledge, but they performed lower in the knowledge of attribute words (i.e., words that define the quality or characteristic of a person). When attribute words are used in social contexts, they can strengthen pragmatic language use (e.g., conversation skills, asking questions). Similarly, a review of language development in individuals with ID suggested that pragmatic language development is more delayed relative to their delays in overall cognitive development (Abbeduto & Boudreau, 2004). Murfett and his colleagues (2008) investigated the narrative language skills of 78 children with ID. The researchers asked questions to children regarding an event attended four days earlier. The results showed that children with ID were unable to provide a detailed and coherent narrative of events. In another study, Barker and his colleagues (2013) examined the relationships among phonological processing and expressive and receptive language skills using a multivariate analysis technique in 294 school-aged children with ID. Results revealed that phonological awareness had a strong association with expressive, receptive, and reading skills of children with ID. Like for typically developing children, phonological processing skills predict word reading skills in children with ID. In general, children with ID follow language milestones of typically developing children but at a much slower pace (Barker et al., 2013; Murfett et al., 2008).

Down syndrome is the most common genetic cause of ID and presents with a specific phenotype among children with ID (Canfield et al., 2006). Laws and Bishop (2004) conducted a study to examine the pragmatic aspects of language and social relationships in a group of

children with Down syndrome, Williams syndrome, and typically developing children. According to the results, the expressive language skills of children with Down syndrome were more significantly delayed than their receptive language skills. Similarly, Barnes and his colleagues (2009) compared the phonological accuracy and speech intelligibility of children with typical development, autism spectrum disorder, Fragile X syndrome, and Down syndrome. The researchers found that children with Down syndrome showed lower phonological accuracy and produced fewer intelligible words than typically developing children. Decreased intelligibility could be caused by anomalies in articulators (e.g., lips, tongue, jaw, ear) or repeated occurrences of middle ear infection (Martin et al., 2009) or the apraxia of speech (i.e., inability to translate conscious speech into articulators). Rupela and his colleagues (2016) investigated the motor speech characteristics of seven children with Down syndrome. All participants showed symptoms of the apraxia of speech with variability within the group. Therefore, these children's use of language form may be significantly affected by their disability. Berglund and his colleagues (2001) used parental reports to compare language skills (e.g., vocabulary and grammar skills) of 330 children with Down syndrome to a normative sample. The parental report analysis revealed that children with Down syndrome were significantly delayed in the acquisition of first words, and they showed slower growth of expressive vocabulary than the normative sample.

Autism Spectrum Disorder

IDEA (2004) defines ASD as "a developmental disability significantly affecting verbal and nonverbal communication and social interaction, generally evident before age three, that adversely affects a child's educational performance" (§ 300.8.c.1). Based on figures from the

Center for Disease Control and Prevention, 1 in 54 children aged eight years has been identified with ASD in the United States (Knopf, 2020).

ASD is a clinically diagnosed condition and largely associated with social communication difficulties (e.g., involving speech, linguistic convention, and interactions White et al., 2007). Children with ASD show repetitive and overly restricted behaviors (American Psychiatric Association, 2013). Due to restricted behaviors and delays in skill development, children with ASD are at great risk for developing challenging behaviors (i.e., socially less acceptable behaviors that ultimately negatively impact education, Jang et al., 2011). Having at least one friend can play an important supportive role in reducing many difficulties, including psychosocial problems (Hodges & Perry, 1999), but children with ASD have fewer friendships than typically developing children (Mazurek & Kanne, 2010).

In the VI literature, children with even mild VI face challenges accessing facial expressions and important social cues (Ammerman et al., 1986), which can result in lower quality engagement with others (Rogow, 1999). The combination of VI and ASD could cause severe social communication delays, leading to an increased risk of loneliness and psychosocial disturbances. Children with ASD have access to sensory information, but they tend to focus on their unusual interests or repeated actions (Matson et al., 2009; Myers et al., 2018). In some cases, they could be hypersensitive to environmental changes (e.g., sound and light). When VI and ASD are combined, reduced access to visual information could significantly decrease children's ability to form new language-based concepts and imitate others.

The language skills of children with ASD vary to a great degree (Paul et al., 2018). Pickles and his colleagues (2014) examined language trajectories of 192 children referred to ASD services and uncovered great variability in language development before the age of six,

which raised the question of whether there may be sub-phenotypes (i.e., observed characteristics correlated with a particular genetic profile) existing among children with ASD. Tager-Flusberg (2006) reviewed previous experimental studies on conversational speech in ASD populations. The researcher's examination of behavioral and neuropathological research suggested that children with ASD may have two distinct phenotypes within ASD: autism language impaired and autism language normal.

Research shows one consistent result regarding the development of language in children with ASD, which is that when these children acquire some expressive language skills, their articulation of speech sounds occurs without any impairment (Kjelgaard & Tager-Flusberg, 2001; Paul et al., 2018). Kjelgaard and Tager-Flusberg (2001) investigated the language performance of 89 children with ASD with standardized testing to examine phonological and lexical language skills. The results showed significant diversity in their language skills, but articulation skills were within the normal range of functioning. Similarly, Eigsti and his colleagues (2007) examined syntactic (i.e., a study of sentences and their structure) and higher-level discourse skills of children with ASD. Analyses of children's sentences showed that most of the children with ASD produced a similar number of utterances but created short sentences compared to typically developing peers.

Pragmatic language development is one of the most studied areas in children with ASD. Research showed that children with ASD have significant challenges in conversation skills, initiations, and topic-related utterances (Hale & Tager-Flusberg, 2005; Paul et al., 2009). Twenty-nine children with ASD and 26 typically developing children were interviewed by Paul et al. (2009) to evaluate atypical conversation behaviors. The results showed significant

differences among groups primarily on the management of topics, rising and falling in intonation, and reciprocity.

This population may have more varieties in language development than any other disability population. Children with ASD may need support primarily on the development of pragmatic language skills (e.g., conversation skills, initiations, etc.) and vocabulary to produce longer and grammatically correct sentences like their typically developing peers (Eigsti et al., 2007; Paul et al., 2009).

Addressing Language and Communication Skills in Young Children with VI and DD

Approximately 11% to 40% of children with VI show typical traits of ASD (Absoud et al., 2011; Brown et al., 1997; Lund & Troha, 2008; Mukaddes et al., 2007). Due to the presence of additional disabilities (approximately 65%) that impact language development, more than half of the population of students with visual impairment may have delays in language skills compared to their typically developing peers. Research suggests that within the DD population, including young children with ID and ASD, language development is highly variable; consequently, interventions that address language and communication skills should begin as early as possible to systematically advance language development (Cass et al., 1994; Dale & Salt, 2007; Dale & Sonksen, 2002). Currently, there are no evidence-based strategies to support language development in young children with VI and DD, but it may be possible to draw on research from the literature on young children with DD to inform new strategies to be explored. A review of the literature shows that language interventions have strong evidence of effectiveness in developing expressive language in young children with DD. For example, Pivotal Response Training (PRT), Milieu Teaching (MT), and Discrete Trial Training (DTT; Lane et al., 2016) are all evidence-based practices for learners with DD.

PRT uses applied behavior analysis strategies to target four essential (i.e., pivotal) areas in child development for children with ASD: motivation, self-management, responsivity to multiple cues, and social initiations (Koegel & Frea, 1993; Suhrheinrich et al., 2018). By improving pivotal areas, PRT creates collateral advancements in other areas (e.g., communicative, social, and behavioral) of child development (Koegel et al., 2003). The PRT intervention includes specific behavioral strategies that have been shown to be effective for each pivotal area (Koegel et al., 2010; Koegel et al., 1988). For example, to improve motivation, PRT includes seven steps: establishing learner attention, sharing decision-making control among child and adult, facilitating child choice-making, varying tasks and instructions, interspersing acquisition and maintenance tasks, reinforcing response attempts, and using natural and direct reinforcement.

DTT has 40 years of research and practice to support its use for increasing the social, communication, and academic skills of children with DD (Lerman et al., 2016). DTT is an evidence-based strategy founded on the idea of breaking down skills or activities into smaller steps and then creating opportunities for a student to practice each step, called learning trials (Sam & AFIRM team, 2016). Learning trials are repeated, and learners receive positive reinforcement for correct responses. DTT has three critical features (Lerman et al., 2016): creating a distraction-free environment to increase participation, focusing on "learning to learn" to facilitate the acquisition, and delivering the intensive intervention in the form of learning trials (i.e., up to 40 hours per week). Components of a specific instructional program include a clear purpose and rationale, a list of needed materials, and precise procedural descriptions (e.g., criteria for prompts and reinforcers).

MT is implemented in a routine environment familiar to the child (Barnett, 2002; Christensen-Sandfort & Whinnery, 2013). The adult follows the child's lead in a setting that encourages the child to initiate interaction. The adult uses prompts and models to correct child behaviors in a natural manner. The child points or requests objects and receives positive consequences to encourage future communication. The strategy includes four specific milieu procedures, including modeling, mand-modeling, incidental teaching, and time-delay. Only one MT study (Yoder et al., 1991) has met high-quality research standards without reservation, a category established by the U.S. Department of Education, which regularly evaluates published peer-reviewed studies to determine whether they show promise for improving student outcomes. Yoder and his colleagues (1991) trained 39 parents to use prelinguistic MT to increase the communication and language skills of children with DD. Children's initiated requests increased due to MT intervention, but the results varied among the children with and without Down syndrome.

A TVI is a certified special education teacher trained to provide learners with access to the education curriculum using instructional strategies and accommodations that support individual student needs (Spungin et al., 2007). Although these interventions show evidence of effectiveness in the instruction of children with DD, it is unclear if TVIs are familiar with these instructional approaches and/or whether they are comfortable applying them in classroom contexts. There is no evidence to support that these interventions would benefit children with VI and VI and DD.

Promising Verbal Language Interventions Specifically for Children with Visual Impairment

Two recent studies investigated communication and language research in VI and VI and ASD populations (Parker et al., 2008; Parker & Ivy, 2014). Parker and her colleagues (2008) investigated the relevant literature for building effective communication strategies for children with VI and DD. They found a total of 30 studies; 23 of these studies focused on augmentative and alternative communication interventions that included microswitches, dual communication boards, or object symbols. Six studies were multicomponent partner training interventions, all of which included various types of alternative media for communication (e.g., sign language, tactile calendar systems, etc.), rather than verbal language. The findings of the review showed that microswitch interventions have been well-established research in multiple children with VI and other disabilities. The researchers concluded that multicomponent interventions that involve the training of partners can be considered "probably efficacious." However, the researchers did not find an intervention that specifically targeted verbal language development. Similarly, Parker and Ivy (2014) searched electronic databases and a published systematic review of educational interventions to improve early and emergent communication skills for both children with VI and deafblindness from birth to 22 years of age. The researchers found varied types of interventions including: (1) 10 studies with microswitch or computer software technology to support communication, (2) 12 studies with multicomponent communication partner training, (3) seven object-symbol studies such as Picture Exchange Communication System, (4) four literacy-based interventions that assess communication behaviors, (5) one study that used wait time, and (6) one study with prelinguistic milieu training. All 34 studies focused on the development of emergent communication skills (e.g., requesting, rejecting, informing, and asking etc.). Across all studies,

several of them included acquisition of new communicative forms or development of communicative attempts. Parker and Ivy concluded that considering the effectiveness of earlier interventions and the prevalence of communication delays in children with VI and DD, researchers need to study early intervention models to close the gap between young children with VI and DD and their typically developing peers.

In conclusion, the collective results from both reviews (Parker et al., 2008; Parker & Ivy, 2014) provided evidence for the scarcity of research on the verbal language development of children with VI. Young children with VI and DD need effective language interventions targeting their disability specific needs. Despite the scarcity of research in this area, the VI literature has no study about what TVIs do in classrooms to influence the language development of young children with VI and DD. The next section will explain the roles and responsibilities of TVIs in relation to the language development of young children with VI and DD.

Teachers of Students with Visual Impairment and Their Roles and Responsibilities

Given the specialized training of TVIs, they are primarily responsible for mitigating the impact of VI on learning and development by adapting tools and providing direct instruction (Lewis & Allman, 2017). A TVI must be prepared to meet the needs of a heterogeneous group of students from birth to 21 years old (Wolffe et al., 2002). For example, a preschool child with VI and DD experiencing a language delay will have different needs than a teenager with VI who is able to discuss major events in history. The majority of TVIs work as itinerant teachers and travel among schools to provide individual instruction to students and consultation services to school staff (Hatlen, 2000; Olmstead, 1991); in 2017, over 89% of students with VI were served in general education classrooms at least part of their school time (U.S. Department of Education,

2019). Within the itinerant model, TVIs work in two different modes, (a) direct instruction and (b) consultative services (Lewis & Allman, 2017; Spungin et al., 2007).

Direct Instruction

TVIs acknowledge that students with VI need to learn the same competencies as their sighted peers, along with the disability-specific content (Lewis & Allman, 2017; Wolffe et al., 2002). This specific content is referred to as the expanded core curriculum and is comprised of nine skill areas, such as compensatory and functional academic skills (e.g., communication modes), independent living skills, social skills, and career education, etc. (Lohmeier et al., 2009). Since the reauthorization of IDEA in 2004, instruction in all areas of the expanded core curriculum became an essential part of individualized education programs created for children with VI (Sapp & Hatlen, 2010). Students' individualized education program should include information about the frequency and intensity of direct instruction (Lewis & Allman, 2017). This process is highly individualized, and there is no data-driven approximate calculation on the level of intensity of direct instruction for children with VI (Sapp & Hatlen, 2010). Wolffe et al. (2002) conducted a study to reveal how TVIs spend their time in the classrooms and what type of training and services they provided students with VI related to the expanded core curriculum. The results showed that, on average, a TVI allocated 30 minutes to one hour every school day to teaching communication skills to their students. Teaching communication skills included teaching children to use a multi-button device for communicating with others, reading and writing in braille, and computer typing skills via computer software specifically designed for children with VI. Unfortunately, there are no studies investigating how the expanded core curriculum is taught in preschool settings, including how TVIs are addressing the language skills of children with VI and DD.

Consultative Services

TVIs conduct formal and informal educational assessments to measure language and communication skills (Suvak, 1999). The primary purpose of these assessments is to select the appropriate literacy media (e.g., braille, print, auditory strategies), determine how VI impacts student functioning in the daily environment, and modify instruction for the students based on results (Spungin et al., 2007). After conducting assessments, TVIs discuss the results with student families, teachers, and other school staff to ensure the student has access to the general education curriculum (Lewis & Allman 2017; Lewis & McKenzie, 2009). For example, a TVI may consult with the speech-language therapist and suggest using switch activated devices to increase the social participation of a young child with VI and DD in the classroom.

Despite the many and varied roles and responsibilities of TVIs, the VI literature has little information to guide TVIs on the instructional strategies that promote language development of young children with VI and DD. TVIs are trained to teach a broad age range of children from birth to 21 years old with direct and consultative services, which may result in limited knowledge of specific practices and developmental targets essential for working with young children in general (Anthony, 2014) and for developing language more specifically. Furthermore, it is unclear how practicing TVIs target language skills and whether or not they feel ready or confident in their ability to influence the language development and learning of preschool children with VI and DD.

Teachers' Self-Efficacy

Teachers' use of practices may reflect their level of comfort in implementing these practices. For example, self-efficacy refers to a person's belief in his or her ability to succeed (Dunst & Bruder, 2014). Studies investigating self-efficacy find that teachers who are more

confident in their ability to influence skill development in a particular area or subject apply more educational practices and have a greater impact on student learning (Gerde et al., 2018). Because there is little research on how to teach young children with VI and DD, teachers may report feeling unsure or less confident in their abilities to use more developmentally appropriate practices compared to teachers with high levels of self-efficacy (McMullen, 1999). As teachers' belief about their ability to accomplish a teaching task increases, they persist in helping every student see and reach his or her full potential (Tschannen-Moran et al., 1998). It is important to note that being confident in teaching and being confident in teaching specific content or skills (e.g., language) are different measures of self-efficacy (Vartuli, 2005). In fact, previous research has shown that including questions about teachers' interest and ability in the content area can reveal more accurate results in self-efficacy assessments (Morgan, 2012).

There are few studies on the self-efficacy of teachers who work with children with VI. For example, in one study, physical education teachers completed a self-efficacy survey before and after participating in an intensive sports camp with young children with VI (Foley et al., 2020). Participants' self-efficacy scores significantly increased after practical teaching experiences at the camp. The researchers concluded that teachers who work with children with VI need realistic and relevant practicum experiences to increase their confidence in teaching. In another study, 109 TVIs completed a survey on their self-efficacy perception regarding teaching young children (e.g., infants and toddlers) with VI and VI and DD using evidence-based approaches found in the early childhood literature (Ely et al., 2020). TVIs indicated that their teaching training program did not adequately train them to work with young children with VI (birth to eight years), and as a result, they reported low levels of self-efficacy on motivation to

implement early intervention practices (Ely et al., 2020). The results of these studies reveal that TVIs may need more practical experiences in teaching early intervention strategies.

The importance of self-efficacy highlights only one factor that influences TVIs' ability to impact language development. Despite the importance of addressing language in the preschool years, the VI literature has little research on instruction to support the language development of young children with VI and DD to guide practice. Yet, TVIs consult and provide instructional recommendations to support teachers of young children as they target unique educational needs of students in their classroom. In order to fill a gap in the literature, this study aims to investigate how TVIs are supporting the early language skills of young children with VI and DD and the extent to which they believe they can impact early language learning. Specifically, the purpose of this study is to answer the following questions:

1. How do TVIs describe their role in supporting the language development of young children with VI and DD?
2. How do TVIs support the language development of young children with VI and DD in school settings?
3. What do TVIs identify as influencing their ability to support the language development of young children with VI and DD?
4. How confident are TVIs in their ability to influence the language development of young children with VI and DD?

CHAPTER TWO

METHODS

Qualitative researchers generally approach a research question based on their beliefs and they are primarily interested in process rather than outcomes (Guba, 1990). Their goal is to better understand human behaviors and experiences by using empirical observation and data collection (Bogdan & Biklen, 2007). I used qualitative design to understand how TVIs support the language development of children with VI and DD. In this qualitative study, interviews and artifact analysis uncovered the ways in which teachers address the early language skills of children with VI and DD. Data generated from interviews with multiple TVIs and from their selected artifacts were analyzed to reveal common knowledge, experiences, and challenges.

Social Constructivism

The social constructivist inquirer is primarily interested in describing common forms of understanding (Gergen, 1985). This paradigm advocates that when a person observes nature, he collects information (e.g., the colors of flowers and houses). Our understanding of these experiences is limited to "words" used to describe observed or perceived reality. For the social constructivist, the process of describing reality is active and accomplished through collaborative communication between people experiencing similar phenomena (Crotty, 1998). Reality is defined by creating knowledge, which is the meaning that is negotiated through social interaction and is shared among the social group. When knowledge is constructed, social constructivists emphasize the importance of context in the process of knowledge accumulation. Social constructivists suggest that there might be one reality, but the conceptualization of reality may differ by person (Lee, 2012). This reality is conceptualized through the structure surrounding the dialogue and the level of thinking (e.g., comprehension, evaluation, etc.; Carlson, 1999; Phillips,

1995). Using social constructivism as a worldview, I hope that investigating teachers' interpretation of their reality may expand knowledge in the literature about the instructional approaches or practices that teachers employ to facilitate children's language development.

Case Study

The case study approach is considerably useful when there is a need to gain an in-depth understanding of an event or problem in its natural context (Crowe et al., 2011). A case study should be chosen when (a) the researcher seeks multi-faceted explorations of complex issues, (b) the participants' behaviors cannot be shaped or manipulated, and (c) the study includes conditions pertinent to participants (Yin, 2016). This approach provides additional insights into the gaps that may exist in a particular field or why one strategy might be chosen over another one (Yin, 2016). Therefore, it was my goal to use a case study approach with multiple cases for an in-depth investigation of how TVIs support the language development of young children with VI and DD.

Collective case studies aim to understand the problem or common features relevant to all participants and their groups (Lodico et al., 2010). Researchers who are particularly interested in people's stories and their reality are eager to relinquish their assumptions to better understand the participants (Stake, 1995). In collective case studies, researchers select several research sites or more than one program within one place (Creswell & Poth, 2018). Multiple case study design usually includes logical replication of procedures in each case to draw conclusions from a small group (Yin, 2016). Observation, interviews, audiovisual materials, and documents are the most frequently used form of information in the data collection phase of a case study (Creswell & Poth, 2018). Evidence that is created from a collective case study can be considerably stronger and more reliable compared to one case study (Baxter & Jack, 2008). When the findings are

grounded in more than one sample, they can provide more convincing suggestions and theories (Eisenhardt & Greabher, 2007). Therefore, I decided to use the social constructivist paradigm and the case study approach to present an in-depth understanding of the perceptions of TVIs who work with young children with VI and DD.

The context for language learning may be influenced by individual teacher experiences, caseload, professional development, and feelings of self-efficacy. My personal goal was to understand strategies and techniques TVIs use to support language development and describe the common themes and structures in their teaching experiences with their student cases. The following figure presents the methodological strategy of this study (see Figure 1).

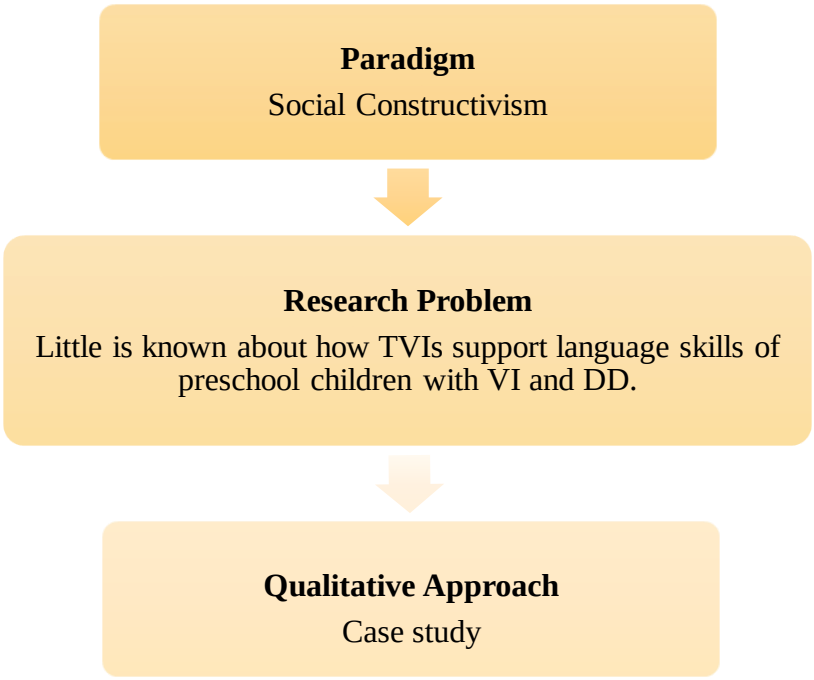

Figure 1. The methodological strategy.

Participants

A typical case study includes four to five participants (Creswell & Poth, 2018). The criterion purposeful sampling strategy looks for cases that meet some criteria to ensure the quality of the research (Creswell & Poth, 2018). I used this strategy to select information-rich

cases. Questions about sample size are fundamental in statistical calculations, but it is considerably different in qualitative inquiry (Vagle, 2018). For example, it has been suggested that the sample size depends on the complexity of a problem (Dahlberg et al., 2008). "A typical sample would be one that is selected because it reflects the instance of the phenomenon of interest" (Merriam & Tisdell, 2015, p. 97). Participant TVIs met the following inclusion criteria: (1) held at least a bachelor's degree and graduated from a TVI preparation program, and (2) had a preschool student with VI and DD on their caseload. Seven TVIs across the USA participated in this study. Participants were provided with a modest compensation for their time, a $25 Amazon gift card for each interview. All TVIs attended the first interview, only Diana was not able to participate in the second interview. Participants' demographic information (e.g., age, years of experience, etc.) can be found in Table 1. More details are provided in the case-by-case analysis of the results section.

Table 1

TVIs' Demographic Information

	Age	Experience	State	Highest Degree	Race/Ethnicity	Type of Position
Alice	25	4	MD	Master's	Hispanic-White	Lead
Anna	32	8	KS	Bachelor's	White	Lead
Charlotte	65	16	CO	Master's	White	Itinerant
Diana	33	8	CO	Master's	White	Itinerant
Emma	23	1	FL	Master's	White	Resource room
Grace	35	8	NM	Ph.D.	White	Lead
Olivia	33	5	NM	Master's	White	Lead

Ethical Concerns

I applied to the Institutional Review Board (IRB) at Florida State University and received an exemption determination. IRB personnel categorized my study as low risk. After receiving the exemption, I sent a recruitment flyer to several TVIs through social media groups and educational organizations. In the flyer, I provided a summary of the study and information about the inclusion criteria. I received several emails from multiple TVIs in 60 days and sent responses with further details about the research process. I sent flyers to different organizations until I found seven TVIs who met the inclusion criteria. I redacted school or childcare facility names and locations from the transcribed interviews and used pseudonyms to ensure the confidentiality of the participants.

Data Collection Tools

According to social constructivism, people construct their reality from their learned experiences (Lodico et al., 2010). Qualitative researchers value unmasking and introducing multiple realities of individual cases. For a case study, the process of collecting information involves reviewing documents, records, interviews, and physical artifacts (Creswell & Poth, 2018). I collected data from three sources: (a) semi-structured interviews, (b) educational artifacts the TVIs used to support language development, and (c) demographic surveys probing TVIs' self-efficacy. In order to provide in-depth answers for all research questions, I interviewed TVIs two times, and each interview lasted at least one hour.

Semi-Structured Interviews

Semi-structured interviews provide a flexible design and add some variance in wording to gain insight into what cannot be observed and make sure participants stay focused during the interview to form a discussion (Leedy & Ormrod, 2013; Merriam & Tisdell, 2015). Before the

interview started, the participant was informed that the interviews will be audio-recorded, transcribed in their entirety, and that they could last up to 60 minutes. The interview protocols can be found in Appendices D and E. The first interview with TVIs included questions regarding teachers' feelings of preparedness and self-efficacy related to addressing the language development of young children with VI and DD. The focus of the first interview was to capture TVIs' general experiences influencing the language skills of young students with VI and DD. The second interview was about their experiences with a specific student and how teachers used their artifacts to influence language development in their classroom. During the interviews, I allowed participants to ask questions and express their concerns about the interviews. They were allowed to leave the interview at any point.

First Interviews

During the Zoom interview, I asked the interview questions to elicit TVIs' perceptions of the ways in which they support the language development of preschool children with VI and DD (see Appendix D). For example, I started with simple information (introductions, presenting the topic, etc.) and moved to more complex questions (specific strategies, teacher-student interactions, etc.). Moving from simple to complex questions positively influenced the researcher – participant interaction by building rapport. This approach helps to build trust during the process of conducting the interview (Castillo-Montoya, 2016). I asked how participants felt about their ability to influence language development and whether they faced any challenges in supporting the language development of young children with VI and DD.

Second Interviews

Second interviews began after I completed the first interviews and had coded them at least twice. The second interview protocol in Appendix E was designed to elicit responses of

TVIs' experiences about a single student and ask more specific questions regarding teacher-student interactions, collaboration with families, colleagues and other professionals. These interviews were used to support the initial findings. I asked participants about creating solutions to problems that impeding student success in language development. I prompted TVIs to give in-depth answers to questions about their professional experiences and encouraged them to use any kind of educational artifact and demonstrate sample strategies to explain how they incorporated them into their practice. Prompting encouraged TVIs to discuss questions in greater detail. When the interviews ended, I used an audio to text automatic transcription service and listened to each recording twice for accuracy.

Educational Artifacts

Artifacts refer to any form of data that isn't collected by observing or interviewing the participants (Merriam & Tisdell, 2015). Using additional sources to support the interview data may increase the transferability (i.e., the degree to which the results might be applicable to other similar situations) of this study. There are various educational strategies to improve language skills, such as milieu teaching and pivotal response training; each strategy may require some form of an artifact to be created. As a social constructivist, I asked TVIs to identify and share an artifact they used and perceived as beneficial to support the language development of the target child with VI and DD on their caseload. I informed teachers that an artifact can be anything used in instructional practice, including lesson plans, anecdotal notes, progress monitoring data, instructional materials, etc. I asked whether they could take a picture or provide a scanned version of these artifacts and bring them to the interview. During the second interview, I prompted TVIs to describe the artifacts. Specifically, I asked them why they selected the artifact.

I used the photos of artifacts in data analysis to create a coherent theme and provide thick description of individual cases in the analysis.

Demographic Survey and Teacher's Sense of Self-Efficacy Scale

A well-developed survey is a vital component of social qualitative research that can provide important insights about teachers' behaviors, beliefs, and attitudes (Vanderstoep & Johnson, 2008). However, a survey's success is tied to objectives aligned with the research goals, clarity of the survey, and an appropriate sample (Blair et al., 2013). Demographic information was obtained from TVIs through a demographic survey that can be found in Appendix F. Questions inquired about personal details, such as their name, age, gender, ethnicity, and years of teaching experience with young children.

This study focuses on TVIs' teaching/consulting experiences regarding the language development of young children with VI and DD. I examined the literature with the intention to find self-efficacy scales for TVIs. Ely and her colleagues (2020) created an Early Intervention Visual Impairment Self-Efficacy Evaluation survey based on a literature review of early intervention and VI. I received their permission to use the self-efficacy survey in this research, but their survey focused on the parent-teacher relationship. I examined a few more scales and adapted a new survey based on Tschannen-Moran's et al. (1998) teacher self-efficacy scale with adapted questions from Ely et al. (2020) and Gibson and Dembo (1984) to reveal TVIs' confidence in their ability to influence language development of young children with VI and DD (found in Appendix G). The survey includes 18 questions. Both surveys were sent to the participants at least a day before the first interview. The results of this survey were used to support the interview findings. It should be noted that no validity data were collected from this survey. Content validity assesses whether a survey covers all related components of the subject it

targets to measure (De Vaus & De Vaus, 2013). The limited number of questions in this adapted scale did not include every topic of children's language development, which may have reduced the strength of its content validity in terms of measuring the differences among participants.

Trustworthiness

Whittemore and his colleagues (2001) analyzed qualitative studies regarding validation, and they found four primary criteria: credibility (i.e., accurate representation of the data), authenticity (i.e., diversity in data), criticality (i.e., critical assessments of all aspects of the study), and integrity (i.e., self-reflective approach). The majority of the threats to credibility include imprecise representation of the collected data and the researcher's misconceptions or bias (Yin, 2016). Validation in qualitative research is an attempt to assess the accuracy of the findings, and the term validity emphasizes a process rather than verification (Creswell & Poth, 2018).

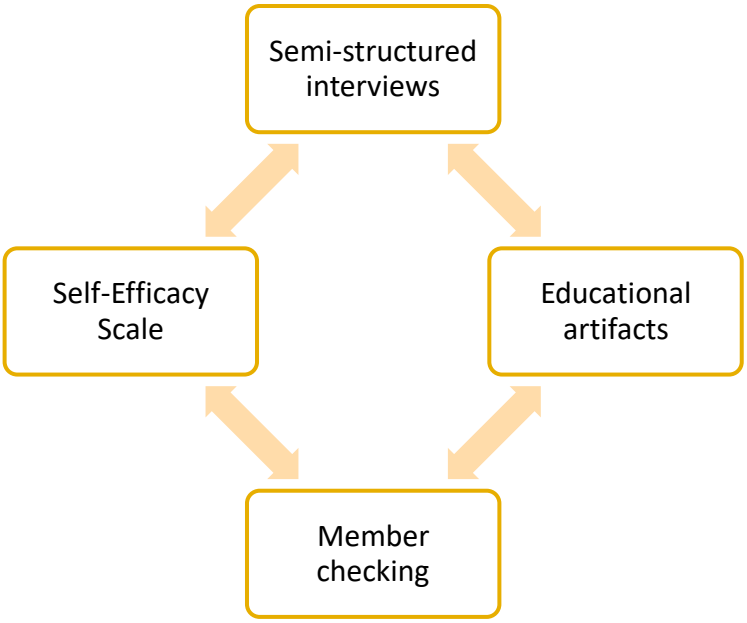

Figure 2. The triangulation of the data.

The literature suggests more than 29 forms of validation strategies that apply to design, data collection, and analysis (Whittemore et al., 2001). Creswell and Poth (2018) recommended

engaging in at least two of these strategies to ensure consistency and trustworthiness of the research. I selected three strategies. First, I triangulated multiple data sources, such as artifacts, interviews with TVIs, self-efficacy surveys, and member checking. The triangulation strategy assists in checking the accuracy from the researcher's perspective. Second, all participants checked the transcription summary of the interviews, which supports the research from the participant's perspective (Creswell & Poth, 2018). Third, I focused on generating thick and detailed description of the data collection and analysis, which enables readers to transfer information to other settings and decide whether the results can be transferred.

Triangulation

Triangulation refers to taking multiple evidence from different resources, methods, investigators, or theories to validate the accuracy of the study (Creswell & Poth, 2018). With triangulation, I attempted to strengthen the credibility and decrease the effects of biases that may influence the study (Carter et al., 2014). I used data source triangulation (e.g., member checking, data from educational materials, the self-efficacy scale, and semi-structured interviews) to ensure that the account of the results is comprehensive and represents the cases accurately. “This process involves corroborating evidence from different sources to shed light on a theme or perspective” (Creswell & Poth, 2018, p. 341). I compared the interview findings with the findings from the artifacts to ensure that the TVIs’ statements (e.g., educational strategies, challenges) can be found in both data sources.

Member Checking

Member checking, or seeking participant feedback, refers to “taking data back to the participants so that they can judge the accuracy and credibility of the account” (Creswell & Poth, 2018, p. 342). Given this study is influenced by social constructivism, I believe knowledge is

socially constructed, so participants had the opportunity to engage with or add to the transcriptions in the interview to enhance trustworthiness (Birt et al., 2016). I used two types of member checking: (a) I paraphrased the participants' statements during the interview and asked whether I understood them correctly, (b) after the interview, I sent the summaries of the interview transcriptions to the participants to let them assess the quality of the transcriptions. Based on their comments, I reviewed and corrected the transcriptions to ensure accuracy.

Thick Description

Almost every major qualitative research book emphasizes thick descriptions (Creswell & Poth, 2018; Denzin & Lincoln, 2012), but the literature shows some confusion about its precise definition (Schwandt, 2001). According to Ponterotto (2006), thick description involves “accurately describing and interpreting social actions within the appropriate context in which the social action took place” (p. 542). I supported the transferability with thick description, describing findings in detail, such as how participants address language development of young children with VI and DD. A detailed description is defined as abundant and interconnected details, such as physical, movement, or activity description. The narrative element in the thick description is considered vital in case study research because it is often viewed that "the art of case study is the art of telling the story of what is going on and what is most significantly meaningful" (Mills et al., 2010). I allocated plenty of time to reexamine the initial findings (e.g., the first interview), and to the best of my knowledge I made sure that key points and themes were created based on the focus of this research rather than reporting everything the participants said. The availability of thick descriptions was limited with an online zoom conferencing application, but I used participants' own words to improve descriptions and transferability.

Peer Debriefing

Peer debriefing, which also referred to as "analytic triangulation" (Given, 2008), is a method in which the researcher reviews and discusses the researcher methods, data collection, and analysis with a peer who has certain qualifications related to the topic and not directly involved in the study (Creswell & Poth, 2018; Denzin & Lincoln, 2012). Peer debriefing has become a highly regarded and suggested method to improve the credibility of a study (Barber & Walczak, 2009). I sought external checks by a recent Ph.D. graduate who had years of teaching experience and who is familiar with similar cases (Creswell & Miller, 2000). My peer reviewed the interview questions, examined my coding during the data analysis, and provided constructive feedback to "ensure that research process meets professional standards" (Shamoo & Resnik, 2009, p. 5). I had two one-hour online Zoom meetings with my peer to receive her feedback during data analysis. Specifically, the first and second TVI interviews were analyzed in different sessions. The peer and I met two times in different stages of these periods to ensure that she would recognize the overarching theme of my study.

Researcher's Stance

In assuming the role of the researcher in this qualitative study, I was the instrument throughout the data collection process (Rumrill et al., 2011). The trustworthiness and accuracy of the results depended on my writing and researching skills, experience, and tenacity. My interest in this topic emerged from my engagement in special education and as a second language English speaker. I am fascinated by the difference between indirect, direct, and nonverbal communication and the ways in which people express confidence, empathy, and clarity through language. As a second language speaker, learning to speak and write another language was exciting and challenging at the same time. Throughout my learning experience, I suspected that

children with disabilities might face more significant challenges to become fluent speakers in their native language. Reviewing the literature confirmed my curiosity and increased my interest in this area.

Before I became a Ph.D. student, I obtained my master's degree from University of Edinburgh in Scotland and worked as a special education teacher in Turkey for two years. Throughout my student and teaching experience, I tended to believe that there is one right answer for all questions, and my goal should be finding them. However, working and collaborating with different professionals in various locations helped me to understand that a typical solution for a problem is rarely simple and unbiased. It may be imperative to consider problems within their specific contexts to find the most effective solutions, case by case.

My master's thesis was about teachers' attitudes towards including children with VI into general education classrooms. I was a firm believer in inclusive education for children with VI before I started my program at Florida State University. Throughout my Ph.D. program, I observed special education classrooms, completed internships at schools for the blind, and conducted preference assessments on children with VI and DD. My initial thoughts about 'inclusive education for all' changed significantly. I believe if students with VI do not receive adequate educational support in inclusive classrooms, it might be better to place these students in residential schools or self-contained classrooms. I choose to analyze available accommodations for the student before I advocate for or against inclusive education.

To minimize the researcher's bias, I incorporated the triangulation of data across participants and data sources. I worked with participants with whom I had no prior relationships. I intended to cultivate an honest and authentic relationship to build trust with participants. During the interviews and data analysis, I made sure that I remained in a state of continuous and

honest reflection. As a second language researcher, I paraphrased the participants' sentences every few minutes to make sure I grasped their sentences clearly without any bias or misunderstandings. I tried my best to become an objective viewer by acknowledging my personal biases, and my goal has been accurately expressing the results using the voice of the participants, as suggested by Denzin and Lincoln (2012).

Data Analysis

Interview transcriptions and educational artifacts are typically analyzed with a content analysis method. This method included two different approaches: inductive and deductive analysis. Deductive content analysis is frequently used in studies where the researcher wants to re-test current evidence or a specific hypothesis in a different context (Catanzaro, 1988). Inductive content analysis is more often used when there is not enough former knowledge about a phenomenon (Jebb et al., 2017), which allows study results to emerge from the frequent, dominant, or important themes inherent in raw data (Thomas, 2006). Considering the purpose of this study and inadequate knowledge about the current language practices of TVIs, I used inductive content analysis throughout the study.

The Constant Comparative Method

Glaser (1965) first described the constant comparative method (CCM) to categorize and constantly compare qualitative data with inductive data coding processes. The purpose of this method is to use coding and analysis more systematically than typically observed in qualitative research (Glaser & Strauss, 2017). The cycle of comparisons continues until the data do not bring any new information to light, which enables research questions to be answered effectively and efficiently (Tesch, 2013). There are several different interpretations and explanations of the CCM (Boeije, 2002; Glaser & Strauss, 2017; Kolb, 2012; Olson et al., 2016), but I found

Boeije's (2002) step by step approach to be the most clear and practical explanation of this method. Boeije (2002) interviewed dyads (i.e., couples). For the purpose of this study, I adapted his step-by-step approach for CCM:

1. Comparison within a single interview.
2. Comparison between the first and second interviews.
3. Comparison among TVIs.

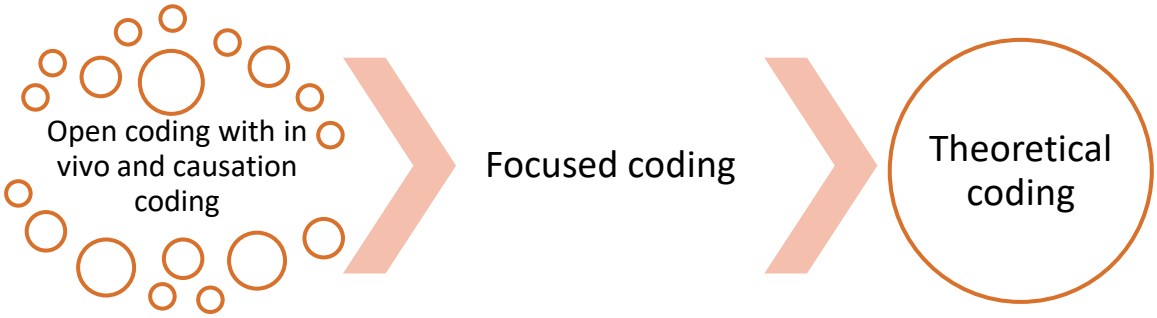

Figure 3. The coding procedures.

Before I provide examples for each step of the CCM, I will explain the coding procedures of the interview transcriptions and educational artifacts. A code refers to a word or short phrase that represents "a summative, salient, essence-capturing attribute for a portion of language-based data" (Saldaña, 2016, p. 3). Tie and his colleagues (2019) suggested the following coding procedures for researchers with a constructivist view: (1) open coding to break down the data into smaller units, (2) focused coding to put back the units and creating categories, and (3) theoretical coding to condense all products of analysis into a few words that seem to explain the major theme of the study (see Figure 3).

I started with open coding, but Saldaña (2016) suggests using open coding in combination with in vivo and procedural coding methods (e.g., causation coding). In vivo coding refers to a word or short phrase from the actual language found in the interview transcript

(Saldaña, 2016); this coding method is relevant to social constructivism, which emphasizes the importance of context in the process of knowledge accumulation. In vivo coding respects a subculture's original vocabulary (Glaser & Strauss, 2017). I wanted to ensure that I used teachers' own words to understand their context and the ways in which they refer to certain events, activities, or phenomena. The open coding process continued with causation coding.

The goal of causation coding is to "locate, extract, and infer causal belief from interview transcripts" (Saldaña, 2016, p. 187). With this coding method, I attempted to uncover the TVIs' mental models about improving the language skills of children with VI and DD. Generally, there are three aspects of causality: The cause, the outcome, and the link between them (Munton et al., 1999). The causation coding method can be used for hypothesizing about plausible causes for particular outcomes (Saldaña, 2016). Exploring TVIs' underlying reasons in the decision-making process assisted me in presenting clear and coherent results.

In the second step of the analysis, the focused coding brought together the most frequent or significant codes and created key categories (Charmaz, 2014). Hatch (2002) suggests that patterns could be in varying forms, such as similarity, difference, frequency, sequence, correspondence, and causation. For example, if an event, activity, or behavior happens in a certain order, it could be put under one category due to sharing the same sequence. However, I took into account that qualitative categories do not always have precise boundaries, and there could be different degrees of belonging to a specific category among the codes.

In the final step, theoretical coding worked like an umbrella to cover all codes and categories and formulate a central theme (Saldaña, 2016). More precisely, Stern and Porr (2017) explain that the central theme is usually a major conflict, problem, or a significant concern to

participants. In this step, every category and concept systematically combined around the central theme to suggest an explanation for the phenomenon.

Comparison Within a Single Interview

At the start of the data analysis, I used open coding to determine what had been said, and I labelled each passage with adequate codes. I primarily used participants' words and extracted causal beliefs about their actions or decisions. By comparing different parts of the interview, I intended to examine consistency to accurately analyze the interview as a whole. For example, clarification was needed when a TVI said that she prefers to collaborate with her colleagues in one part of the interview but indicated elsewhere that she sometimes prefers to do the same work alone without an explanation. The aim of this comparison within a single interview was to formulate the core message and develop categories from the open coding. The following guiding questions are adapted from Boije's (2002) approach for the CCM and were used during the data analysis: (a) Which codes are used to create categories in this interview? (b) What characteristics do fragments with the same code have in common? (c) What is the core message of this interview? (d) Are there any expressions that are contradictory?

Comparison Between the First and Second Interviews

In this second step, I compared the first and second interviews of TVIs to give data triangulation a central place. Even though the first and second interviews had slightly different questions, the TVIs had the opportunity to reiterate what they had been discussed in the first interview. This part of the analysis involved refining the initial codes and bringing together the most frequent or significant codes to create key categories. Comparing and contrasting the interviews revealed certain issues or concerns that were not mentioned in the first interview (e.g., challenges of collaboration about bilingual students). In the second interview, the participants

primarily discussed one of their students' educational needs, the collaboration between professionals, and how they targeted language skills, specifically in this case. For example, clarification was needed when a TVI said that he primarily uses a specific language strategy for young children with VI and DD, and he did not provide any examples in the second interview. The following guiding questions are adapted from Boije's (2002) approach for the CCM and were used during the data analysis: (a) What codes are used to cover the core issues? (b) Are there contradictions between the first and second interviews? (c) What nuances, additional details, or new information does the second interview supply to the first interview? (d) Which categories/themes appear in one interview but not in the other interview?

Comparison Among TVIs

The final step of the comparison was between TVIs, who were asked to answer the same questions throughout the study. Comparison began when I collected data from more than one participant. The first purpose of this comparison was to reveal common categories and themes across the participants of the same profession. For example, I compared and contrasted common issues and concerns about the language development of young children with VI and DD. This level of comparison mainly took place in focused and theoretical coding. The second purpose of this comparison was to reveal the common themes between TVIs. Interviews provided information about TVIs' self-efficacy and their preparedness as an educational consultant. This level of comparison was the most complex of the entire analysis because it involved interviews from several different perspectives, and the participants weren't sharing exactly the same experience. The following guiding questions are adapted from Boije's (2002) approach for the CCM and were used during the data analysis: (a) What are the typical differences between participant A and B, B and C, A and D etc.? (b) On which created categories can participants be

compared? (c) What patterns exist in participants that they experience similar or different phenomenon?

Analysis of the Teacher Demographics Survey and the Adapted Self-Efficacy Scale

The demographic survey results were used to introduce and describe each participant in the data analysis section. Descriptive statistics were used for the adapted self-efficacy scale to report the basic features of data (e.g., mean and median). Due to the low number of participants, inferential statistics were not used to make judgments of any probability or generalizations. The results of the self-efficacy survey were triangulated to the interview transcriptions of TVIs. The responses of TVIs provided validation of the interview data. For example, for a TVI who expressed their confidence in improving the language skills of children with VI and DD but did not use any type of vocabulary (e.g., I can, I did, I am, etc.) to express confidence while responding to similar questions during the first interview, I would discuss this topic in the second interview or reach her via email to ask for clarification before reporting the data.

CHAPTER THREE

RESULTS

This study's social constructivist theoretical base was inspired by the idea that contextual factors are intertwined, and teachers construct their own realities based on their experiences (Amineh & Asl, 2015). Three themes emerged from interview and artifact data analysis: (1) TVIs have a unique role in supporting the language development of young children with VI and DD because of their understanding of how vision can impact children's ability to develop language; (2) TVIs consider the SLP as “in charge” of language development; (3) TVIs prioritized concept development and applied a variety of strategies; (4) TVIs have limited training in language acquisition and varying levels of confidence in their ability to impact language development.

The results are presented first as individual cases that include descriptions of TVIs' background and experiences influencing the language development of young students with VI and DD on their caseload. Next, the results from the cross-case analysis are shared, which includes details of TVIs’ perceptions and experiences through a process of inductive reasoning. The results are discussed in six sections: The following four sections include a thematic analysis of TVIs' general understanding of their role, use of strategies, collaboration experiences, and factors that affect their self-confidence in influencing language development of young children with VI and DD.

Close Examination of TVIs Experiences Influencing Language Development

Each case description includes the background and teaching experiences of the TVI. In addition, the case studies share the reflections of TVIs related to influencing their students'

language skills with the use of strategies and artifacts. Case by case analysis is included to provide an introduction about each TVI before sharing the themes generated across cases.

Emma's Case

Emma is a 23-year-old female, working as a resource room TVI. She has taught young children with VI and DD for one year and currently has nine students on her caseload. She graduated from a TVI training program with a bachelor's and a master's degree. When asked to reflect on a current student with VI and DD in her classroom, Emma described Noah, a five-year-old student with low vision and DD. Emma did not provide additional information about his diagnosis for receiving VI and DD services. Noah is struggling with handwriting; he is learning letter and number identification. Currently, he can count up to 10. One of his IEP goals was asking WH questions and providing answers when he is asked a question. Noah can produce two-to-three-word sentences, and he can verbalize up to five-word sentences when he is prompted. Emma values building a strong two-way connection with her students. She starts her class with activities to cultivate her relationship, specifically with Noah.

> **Emma:** So, my main thing, a typical day, we hug, we play a little bit, we talk to each other, I spent a lot of my time with preschoolers just developing rapport. We would either work on handwriting, a few things, and then a number or letter identification working on one or two letters or numbers very quickly. Otherwise, if we don't do it quickly and get it done, he doesn't do well because of his attention span. So, we work quickly.

During break time, Noah usually prefers reading a book.

> **Emma:** Usually, he wants to read a book, which is perfect. Because again, even though it's not my goal, reading a book is the perfect opportunity for language development. And so, I let him pick the book. As I read, I asked him questions on every page, what do you

see? Who is that? Where do you think he's going? And he has to answer me and enunciate.

While reading aloud, Emma creates multiple opportunities to target literacy, and expressive and receptive language development. She later described what she would do if Noah did not answer her questions.

> **Emma:** I have to understand him. Otherwise, he has to continue to say it or choose a different word to describe it to me differently until I can understand. And at this point, I understand his kind of muffled language a little better. But also, he's speaking more clearly.

Emma doesn't collect data about language skills, but she still contributes to Noah's language development in one-to-one sessions.

> **Emma:** I don't collect a lot of data on this because it's not my goal, but it's just something that I do…he's getting older and his classroom teacher and his SLP take that language data. When I'm done, I would go and tell his teacher how he did and she's also listening. She's in the room kind of hearing what's going on.

Emma meets with the SLP monthly and talks to the lead teacher at least once a week. She thinks Noah will lose the DD label once he reaches the age of six due to his significant educational progress.

> **Emma:** I think right now it's just watching him get older and understanding that fluidity of sentences without me needing to prompt him. But it's a big jump from what it was when he wasn't articulating any of his words, and it wasn't making sense, so now he articulates clearly.

Emma expressed building good connections with the family and other colleagues. She believes providing a reliable, safe space contributes to Noah's overall development.

> **Emma:** The kids get to know, get to trust that you love them. They are happier to learn when they know that it's a really safe space and that we know their parents and I know the classroom teachers but some time at their home as well. So, it feels more like a home for them when they come in to learn something, and they know all their physical needs are being met.

Emma shared her weekly notes with me to show Noah's progress (see Figure 4). She said she does not need to be very specific because these notes are only for personal use to help her remember Noah's current level and what they are supposed to do in the next session.

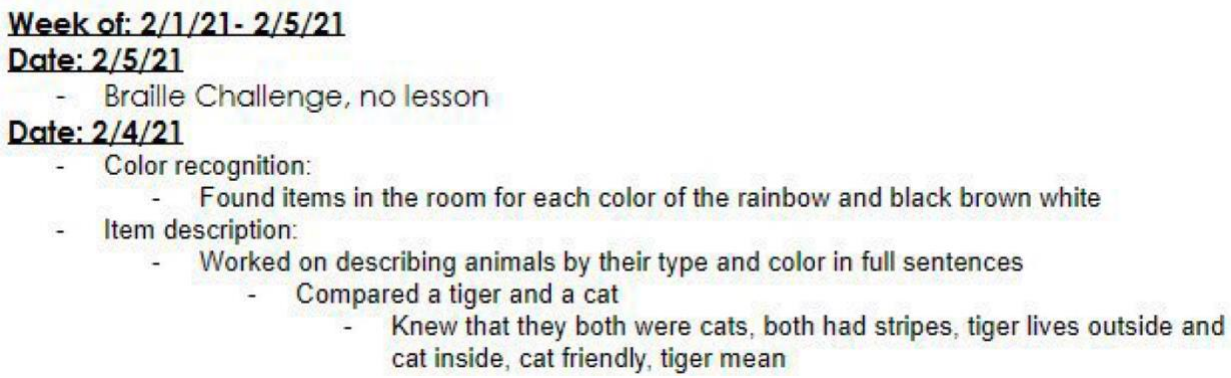

Figure 4. Emma's brief notes about Noah's weekly progress 1.

Noah is making progress on his ability to identify colors and describe and compare animals in full sentences.

> **Emma:** For the item description, I pulled out a bucket of animals. And I wanted him to describe each animal to me, and this was when we talked earlier about the cat versus tiger. The focus was on describing the difference between the tiger and the cat. We worked on that. It was just again, another check-in I need to be certain he could do this.

Emma also taught Noah how to use the grabbing tool and prompted him to describe the tool verbally (see Figure 5).

> **Emma:** His goal is to be able to describe things clearly and he said, “Grabber grabber it can grab anything.” And I was like, that is a really clear sentence that I don't know what that's called either. I would call it a grabber. I don't think there's a name for it.

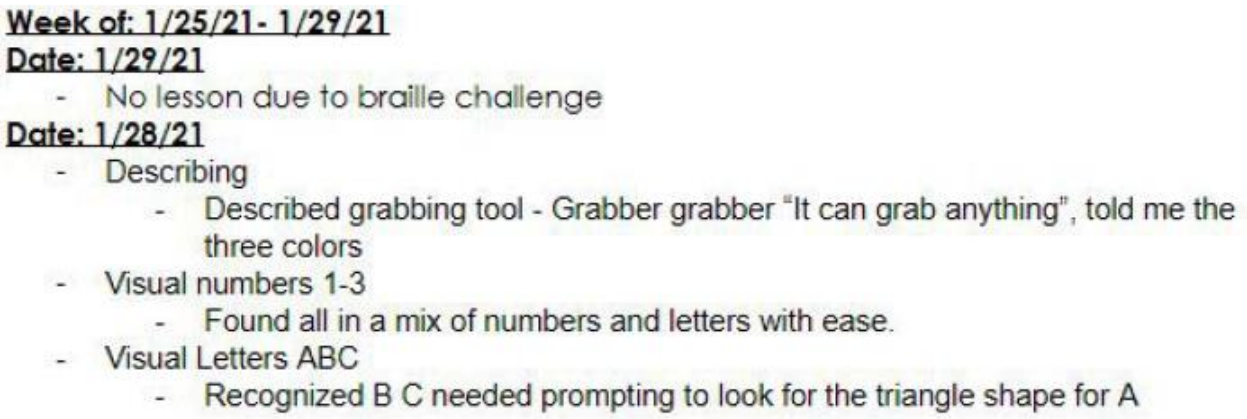

Figure 5. Emma’s brief notes about Noah’s weekly progress 2.

Later in that class, Noah used the tool and grabbed different objects and correctly told the color of these objects. Emma described this session as a "successful achievement."

In conclusion, Emma explained that some language development-related goals are not her responsibility, but she uses every opportunity to target language. Emma works on letter identification, literacy, vocabulary, expressive and receptive language skills. She did not provide greater details about Noah's medical background or show me any educational artifacts. Still, her daily teaching sessions with Noah included modeling, prompting strategies, and providing multiple opportunities to use language.

Charlotte's Case

Charlotte is a 65-year-old female, working as an itinerant TVI. She has taught young children with VI and DD for 16 years and currently has five students on her caseload. She has an undergraduate degree in microbiology and graduated from a TVI training program with a master's degree. When asked to reflect on a current student with VI and DD in her classroom, Charlotte described Alfred, a four-year-old student with arthrogryposis (i.e., congenital joint contracture in two or more areas of the body) and low vision. Alfred has several different medical conditions, such as a clubfoot, gene mutation, and seizures. He imitates a few words, but Charlotte said she is unsure whether Alfred will ever improve his language skills due to his medical difficulties. Charlotte conducted a functional vision and learning media assessment to analyze Alfred's current educational needs. When she shared her suggestions with the family, they did not want vision services due to Alfred's medically fragile condition. Charlotte listened to the family's concerns and insisted on providing instruction.

Charlotte said Alfred "was actually able to reach and make a choice between two choices of toys or familiar objects. So, this was the beginning of his communication." When asked what he wants to play with Alfred reaches for the desired object. Charlotte and the speech and language pathologist discussed providing an alternative form of communication for Alfred. Charlotte used an application called Boardmaker in a few sessions. Her goals were to teach making choices on an iPad. Charlotte later recommended that she wants to use real objects that are familiar to Alfred and the family. When asked about her role in Alfred's language development, Charlotte explained, "Honestly, I don't know. Because I guess I need more information about how my role as a TVI supports language. Because I really haven't thought that that was a big part of my role as a TVI."

My conversation with Charlotte was quite brief about her young student with VI and DD. Charlotte described another student called Ava. However, our discussion was primarily about Ava's educational needs rather than Charlotte's instruction related to influencing language development. Therefore, Charlotte noted that she is unaware of her role in influencing language development as a TVI.

Alice's Case

Alice is a 25-year-old female, working as a TVI in the role of lead teacher in a self-contained classroom. She has taught young children with VI and DD for four years and has eight students on her caseload. She graduated from a TVI training program with a master's degree. When asked to reflect on a current student with VI and DD in her classroom, Alice described Tony, who spends half of his school time in Alice's class and the other half in a special education teacher's classroom. Tony has VI and a mild cognitive delay, but he carries DD label rather than intellectual disability because he is only five years old. Tony has been diagnosed with Alström syndrome, which causes his visual and hearing skills to progressively deteriorate through the first and second decade of his life. Alice said that Tony's visual skills are getting worse since the beginning of the semester. It is difficult to identify the reasons due to online teaching and additional disabilities. He is learning to use braille to access reading materials and to express himself through a tactile writing system. Tony has delays in fine motor skills, and he needs some support positioning his hands correctly on devices such as a braille typewriter.

Alice explained that Tony's "receptive language is stronger than his expressive language skills. The length of his utterances is maybe shorter than what you would expect for a student his age." He is also struggling to articulate certain words or phrases, and it can be difficult to understand his speech. He shows traits of echolalia due to his habit of repetition of Alice's

sentences. According to Alice, "… one of the reasons he's in a special education classroom is because of his language delays and fine motor delays." Since the second quarter of 2020, Tony has been taught remotely via Zoom, and Alice started to keep progress logs. "One of the things that has started since we I've been remote the county is asking us to write progress logs." Alice's service log notes show that Tony is making progress, particularly in braille reading and writing goals (e.g., tactile identification, tracking and finding the end of a braille line, writing ten letters, etc.).

Table 2

Tony's First Goal Tactile Discrimination Skills

Goal	Given modeling and direct instruction, Tony will demonstrate tactile discrimination skills needed for beginning braille reading.
Objective 1	Tony will tactually identify basic shapes (e.g., circle, triangle, and square) by pulling a requested shape out of a bag or other structure obstructing his vision or by verbally identifying a single shape placed inside of a bag or other structure obstructing his vision.
Objective 2	Tony will tactually identify a basic texture (e.g., smooth, bumpy, fuzzy) by pulling a requested texture out of a bag or other structure obstructing his vision or by verbally identifying a single texture placed inside of a bag or other structure obstructing his vision.
Objective 3	Tony will complete tasks designed to master the concepts of top, middle, bottom, left, and right in relation to his body and a braille cell.

Tony attends 30-minute sessions online with Alice five times a week. Alice noted that things would be different if teaching in person, suggesting: "If we were in the building, and there was no Covid, he spent the entire morning with me, and the entire afternoon with his special education teacher." Alice shared several goals and objectives, including language and literacy-related goals and objectives (see Table 2).

Alice's primary goal was to teach pre-braille skills, but some of the objectives were closely related to language concepts, including circle, smooth, top, etc. She wanted to ensure that

Tony acquires pre-braille skills for learning braille. Alice uses an artifact called a doghouse to address the second objective. Alice asks Tony questions about each bone's shape and texture, and the parent helps Tony access the particular components of the artifact.

> **Alice:** It's like a doghouse, and it has all these bones are different types, it has different textures of bones. I got one for him to talk about textures, and these are the same. These are different and reinforce that concept first with physical objects. I showed him some slides of images that were the same or different and asked, 'Are these two things the same or different?' There were objects I knew he was able to visually identify. He's done really well with that.

Figure 6. Alice's doghouse toy for teaching basic textures.

Alice used two identical toy bears to teach top, middle, bottom, left, and right concepts. She used one of the bears, and she sent the other one to Tony's home.

> **Alice:** I chose two identical bears again. Mom's helping me you know… The two bears have the same shape same size, same color.

Alice shared her progress logs with me, and I examined the part that includes her latest assessment. “Given three basic textures inside of a bag (smooth, bumpy, and fuzzy) Tony has been able to pull out a requested texture during 8 out of 9 opportunities or with 88% accuracy which means he has mastered that objective.” This assessment is a measure of Tony’s receptive knowledge of textures by providing the object with the characteristics of the adjectives used (e.g., bumpy, smooth). Tony also had goals related to emotion regulation (see Table 3).

Table 3

Tony’s Second Goal Emotional Regulation

Goal	Emotional Regulation: Given visuals, sensory strategies, multiple opportunities for practice, modeling, and instruction targeting emotions/calming strategies, Tony will participate in emotional regulation behaviors.
Objective 1	Given a visual menu of choices and modeling, Tony will participate in a calming strategy to help regulate his emotions and persist through non-preferred activities.
Objective 2	Given a story with clear and bold pictures, Tony will identify the emotions of characters and the cause (ex: the character feels happy when playing with friends) in order to increase emotion identification skills.
Objective 3	Given labeled pictures of emotions and a sentence starter (Ex: I feel ____), Tony will identify his emotions.

Alice used dog, cat, and bear plush toys with changeable facial expressions to teach emotion words. She asked parents to purchase one for their home. Alice used the knob on the toy's head and turned it to flip the facial expressions such as happy, sad, surprise, angry, amused, and sleepy (see Figure 7). She asked Tony to identify the emotion or describe his emotion using the plush toy.

Alice taught “I feel ___” sentences to give examples of emotions that reflected her facial expressions or Tony’s parent's expression. Lastly, Tony had an opportunity to express himself using the same sentence structure.

Alice: Working on that sentence of “I feel ___," once we, when I greet him, ‘Hi, how are you today?’ Saying I feel happy, or I feel angry. And usually, I'll give him visual choices. But I've started to notice that even without the choices, he will give me a response. He is happy most days, which is a good thing and a bad thing. I'm glad he's happy. But it doesn't give me a lot of data on if he can identify those other emotions… So, the other day, for whatever reason, but I did see him kind of crying when he logged on. How are you feeling today? I feel sad. So, I don't know why then a few moments later, he was fine. Something made him feel sad. So, I thought that was awesome.

Figure 7. Alice’s emotional plush toy for teaching emotional regulation.

Alice shared her excitement that Tony has expressed his emotions verbally, matching his body language. However, Alice said that the special education teacher is not sure Tony has learned to identify emotions correctly due to his inconsistent answers.

In conclusion, Alice kept anecdotal notes on teaching each of Tony’s goals. The special education teacher wrote her notes after Alice's paragraphs in the same document, which likely increased opportunities for collaboration and early identification of possible development delays in their students. Alice used two different toys to teach several objectives. Alice is working on

several goals with Tony, including pre-braille and emotional regulation goals. Her instruction focuses on Tony's identification of concepts (circle, smooth, top, e.g.), braille letters, and emotions. Related to language, Alice focused her responses on teaching concepts and braille.

Anna's Case

Anna is a 32-year-old female, working as a TVI and a lead teacher in a self-contained classroom. She has taught young children with VI and DD for eight years and currently has four students on her caseload. She graduated from a TVI training program with a bachelor's degree. When asked to reflect on a current student with VI and DD in her classroom, Anna described Lily, who is a six-year-old student with a cortical visual impairment (i.e., abnormal visual responses caused by atypical processing of visual information in the brain) and who needs a wheelchair due to some mobility issues. Lily struggles to retain information and needs opportunities to improve her cognitive skills. She can use the wheelchair independently, such as maneuvering and propelling it. Lily shows developmental delays in fine motor skills. Anna explained the delay as "having a weaker right side," which makes Lily require assistance in some places such as restrooms. Anna described Lily's language skills as "developing." She can imitate and produce three to four-word sentences. Recently, she was able to name several three-dimensional objects. Anna thinks Lily's receptive language skills are stronger than her expressive language skills because she is able to follow simple directions. Lilly attends the school for four full days and one-half day. She receives services from Anna, an orientation and mobility specialist, physical therapist, occupational therapist, and a speech and language pathologist.

Anna described two annual goals related to language development. Her progress notes had a baseline section that informed Anna about Lily's present level related to the goal (see Table 4).

Table 4

Lily's First Goal Visual Discrimination

Goal	Lily will match common objects to the pictures on 4/5 opportunities on 3/4 data days.
Baseline	Lily can identify/label 3-D objects (shoe, ball, spoon, cup, baby).

Anna described the relationship between cortical VI and the challenges of identifying three-dimensional objects. Lily has been experiencing difficulties in this context.

> **Anna:** So right now, she is able to identify or label or verbalize shoe, ball, spoons, cup, baby, and their three-dimensional form. But in that two-dimensional form, she's not yet able to identify it, which is common with her diagnosis of cortical VI being able to identify three dimensional, but when it's in two-dimensional form, it's a lot harder and like the way that she has to process that takes longer.

The goal only is a receptive language skill. I asked her to explain this goal in relation to Lily's language development.

> **Anna:** So that kind of, I think, has to go with language to just being able to label those objects and understand what they are and what they are used for.

Anna identified the goal as labeling and understanding those objects, but she is assessing Lily's ability to match objects to the pictures. From this assessment, it is unclear if Lily understands how the objects are used. Anna's explanations were relatively brief, and she did not speak about specific activities. Instead, she explained how this goal overlaps with goals from the SLP.

Anna: I think this was the goal that she (Lily) had worked on before with the SLP, and so it definitely overlaps…, but there's a lot of things that she's doing in this speech room. The SLP might show us how…not necessarily like the production, speech and things like that, we kind of leave that because they know all about the mouth and information and what to do. So, I don't really do that. But we definitely overlap and use the different suggestions that the other therapists give us, or we might give them.

Anna described her general collaboration with the SLP but provided no specific details or examples of recommendations. Lily's second goal was to follow simple 2-part directions (see Table 5).

Table 5

Lily's Second Goal Following Directions

Goal	Lily will follow simple 2-part directions in 80% of opportunities on 4/5 data collection days.
Baseline	0/4

Anna expressed that Lily could follow one step directions such as "find this sink" or "find the bathroom," but it is harder for Lily to process two-part directions. She said, "we are trying to work on expanding those two-part directions and giving her more opportunities." Her instruction provides an example for influencing receptive language development.

Anna: So, adding like that two steps, when we're doing seated work, or we're at the table. 'Open the crayon box, open the supply box and find a marker.' So, making sure that she's at least able to open the crayon box and then find a marker. Sometimes we have to take it back and just make sure that she's able to do at least the first direction before asking her to do additional work.

The example anecdote above shows that Lily still practices following one-part directions. At the end of the interview, Anna explained how they use a multidisciplinary approach at their school to try different teaching methods rather than having a fixed approach.

> **Anna:** We do a multidisciplinary approach just because we have such a big team and so many people are involved. Even if you are a speech pathologist and you're working with the speech and language aspect, there are other parts like the positioning. You have to work with the physical therapist to figure out the best position. You have to work with the vision teacher. Are you showing pictures, are you showing objects, are you doing a certain color? It is just not having one specific way of teaching but making sure that we are letting that child learn in a variety of different ways.

Anna noted that Lily has a team with members with different areas of expertise, and she sees her role as supporting Lily's vision. In conclusion, Anna explained two educational goals related to receptive language development. She did not share any pictures of educational artifacts, toys, or materials. She has been teaching via zoom for a semester. She realized that the diagnosis of cortical VI makes it difficult to teach concepts in two-dimensional form, and it takes more time for Lily to process the information. She addresses this goal with support from Lily's related service professionals, including the SLP and physical therapist.

Olivia's Case

Olivia is a 33-year-old female, working as a TVI and a lead teacher in a self-contained classroom. She graduated from a TVI training program with a bachelor's and a master's degree. She has taught young children with VI for nine years, VI and DD for four years, and currently has seven students on her caseload. When asked to reflect on a current student with VI and DD in her classroom, Olivia described Ivy, who is a five-year-old student with cortical VI and a rare

medical syndrome. Olivia could not remember the name of the syndrome, but she explained that "only 69 other kids in the world have it." Ivy's eyes appear typical but do not show typical visual behavior. For example, she has a distinct color preference and better vision when looking at moving items than stationary items. Olivia said that Ivy's visual field may change depending on the lighting conditions of the environment. Ivy uses a wheelchair, and she imitates one or two words (e.g., mum and hey). When Ivy wants to communicate, she uses her hands to reach, push or acquire objects rather than making a vocal sound. Olivia uses cue cards with pictures to practice Ivy's capabilities to understand and retain information.

> **Olivia:** She has her cue cards on a board. So, all four of them are up top, and four of them are on the bottom. And if she chooses one, I have to switch it to see if she is able to find it again, so she wants that specific one. It is like a comprehension check.

Table 6

Ivy's Adaptive/Self-Help Goal

Goal	Within a year, during self-help activities with visual supports, the student will actively participate in self-care routines such as assisting with a diaper change, dressing, washing hands, and self-feeding in 3 out of 5 observed opportunities as assessed by staff documentation.
Progress Note	The student wanted to wash her hands independently, so she scooted herself to the sink in the classroom (not the bathroom) and used her arms to pull herself up, stepped up on the stairs, and turned the water on independently. She did need assistance when getting the soap and a paper towel to dry.

When asked about Ivy's receptive vocabulary, Olivia noted, "It takes a lot of repetition and we are talking it could be anywhere between a month to four months for like teaching one word." Olivia mentioned an iPad app called "Touch Chat," which is a form of augmentative and alternative communication. Olivia worked with the SLP to teach the iPad app, and Ivy currently only uses it to make requests. When Olivia asks a question such as "What do you want?" Ivy

makes a short sentence with the photos such as "I want milk" to convey her message. Olivia said, "A year ago when I first got her, she did very little. So, she's come a long way with the iPad." Olivia shared some of her progress notes with me (see Table 6).

The progress notes only describe Ivy's behaviors in targeting the self-help goal, and no mention of communication. Olivia shared a completed Oregon Skills Inventory assessment. Olivia completes the cognitive, social, compensatory sections, and SLP is in charge of the language assessment part. Olivia said that "I always collaborate on whether or not we're on the same page if she feels like, can the student do that?"

> **Olivia:** Oregon skills inventory is a great guide to see, like, where the kids are at. And it helps break down those steps. Well, how do you get this kid to do that? And some of the IEP goals are written from this.

In conclusion, Olivia works with the SLP to teach Ivy how to use a communication device. She focuses on comprehension, retention, self-help goals. She did not explain activities or instructions related to influencing language development. Olivia uses an AAC device with Ivy to let her make requests and convey her needs using the device. Olivia said that it takes several months to teach a single word to Ivy.

Grace's Case

Grace is a 35-year-old female, working as a TVI and a lead teacher in a self-contained classroom. She graduated from a TVI training program with a bachelor's and master's degree and has a Ph.D. in special education. She has taught young children with VI and DD for eight years and currently has seven students on her caseload. When asked to reflect on a current student with VI and DD in her classroom, Grace described Maya, who is a four-year-old student with total blindness (i.e., lack of light perception) and cognitive developmental delays. Maya experiences

blood sugar, hormone issues, seizures and shows symptoms of echolalia. Grace thinks that Maya is developmentally at least a year behind her peers without VI and DD. Maya is a tactile learner and requires braille as her learning medium (i.e., a preferred sensory channel for learning). She can identify several familiar objects, shapes, and food by touch. Maya is difficult to assess in terms of the mean length of utterances because she can express eight-word sentences, but it would be completely memorized scripts or echolalia.

Grace said that "language goals would fall to the SLP," but she explained the goals and what she did as TVI to influence language development.

> **Grace:** For most of the year that she was with me, it was getting her to really do two-to-three-word phrases that were to make her wants or needs known, answer questions or make requests. I think a lot of it came down to just a lack of vision and a lack of being able to anticipate or understand what was expected of her or not knowing how to communicate.

Grace recognizes that blindness may have a significant impact on Maya's language skills.

> **Grace:** Most of the time, if she was given a one-step direction, she needed constant singing, prompting to get from point A to point B, which made her I think very unaware of how she was getting from point A to point B.

Grace worked on building independence and following a one-step direction and saw some success. Then she focused on more language-specific goals to let Maya express herself with more words for increased independence.

> **Grace:** My goal is to shape that echolalia into appropriate statements. Then really give her the scripts that she would need to basically talk out loud, begin by talking out loud to

herself, and then slowly internalizing that to be self-talk, and then being able to do the task independently.

Maya imitates speech, but Grace is unsure if she understands the meaning of these statements. Grace focuses on moving beyond echolalia to conventional language.

> **Grace**: I think a lot of it again, comes from just like, in terms of addressing the echolalia, that definitely came more in terms of like my experience with similar students. And I mean, I've had like, maybe two or three students prior to her that they were just also similar. So, I did have those experiences and strategies from those experiences that I felt would be worth trying with her.

As a TVI and a lead teacher, Grace said she had a different perspective than the SLP in her school. She had an opportunity to guide the SLP with her vision-specific knowledge.

> **Grace:** …the echolalia piece, I really addressed on my own, I wouldn't say I got it from the SLP. I was working with a very a brand new SLP to VI students. I think she recognized that my approach to echolalia from a vision standpoint is different than what she knew.

Grace explained that she aims to follow the IEP goals. She considers the language-related goals and creates opportunities with a vision-specific focus to influence Maya's language development.

> **Grace:** I really work on the descriptors... the texture of something and then the object makes a really great two-word sentence and meets the IEP goal that have two-to-three-word sentences. Also, the IEP drives what I'm focusing on.

Grace later explained that she needs concrete and mostly tactile experiences every day because Maya lacks light perception. Grace noted that children with total blindness and DD (like Maya) may have an incomplete understanding of objects unless they experience them tactually or with

other senses. Grace used object symbols as a reference to each activity. Maya was asked to take the symbol to the location of the activity. Music had significant importance in her instruction.

> **Grace:** The object symbols helped her understand what was coming next with activities and having her physically take that symbol to the location. They will not be in sort of any kind of like linear order. So, we use objects, symbols for transitions… getting her from point A to point B.

Grace used Maya's favorite music and replaced specific words to teach concepts in Maya's environment. For example, she used the music tune of "Twinkle, twinkle, little star" and replaced the words as "Maya, Maya, walking down the hall." Then Grace described the items and the items in the hall while singing the Maya's favorite music.

> **Grace:** Now she knows where she is, she would put her hand out to touch the wall and then after even a few days, because she was so empowered with music, she could fill in the made-up song words.

Grace altered Maya's favorite music with words that described Maya's environment and encouraged Maya to fill her own words. Grace provided another anecdotal example from her instruction.

> **Grace:** One of the other things that we did to help make it all really concrete as well as kind of bridge the literacy gap was, all of my students had some texture to represent their name.

Grace explained that most of her other students have some visual skills to identify basic pictures and learn to recognize themselves in a photograph. She created name cards including students' braille names with unique textures (e.g., velvet) for Maya. Grace's educational assistant sits close to Maya and describes what Grace is doing. The assistant gives the name card to Maya

depending on whose turn is in the activity. The assistant gradually increases the difficulty and lets Maya find the correct card from a pile of name cards. Once she finds it, the assistant enunciates the student's name.

> **Grace:** I would say after two, three weeks, if it were Susie's turn Maya would pick Susie's card. Then we worked into some directional words to find Susie. Hopefully with repetition and consistency, she will end up using the words that she keeps hearing with these experiences.

In conclusion, the two example instructions above reveal several qualities about Grace's teaching. Grace took full responsibility for Maya's language-specific needs and used her VI knowledge to target language development. Grace used concrete supports to provide opportunities for spontaneous expressive language. Lastly, she focused on more language-specific goals to teach new vocabulary for increased independence.

Cross-Case Analysis

Data analysis revealed several major points related to the research questions posed. First, TVIs primarily see their role as unique in supporting the language development of young children with VI and DD because of their understanding of how vision can impact children's ability to develop language. Their unique role emerged further in their descriptions of their practice. All TVIs reported the importance of focusing on the concept development of young children with VI and DD because, unlike their peers without VI, they will not learn concepts incidentally. All TVIs also saw the role of the SLP as the primary decision-maker in relation to students' language development. The participants' self-confidence changed depending on their level of training in language. For example, TVIs who had graduate level training in early childhood had more confidence in their ability to impact language development. Lastly, TVIs

used six different strategies to support the language development of young children with VI and DD. Their anecdotal examples of how they used these strategies are discussed later in this section.

The Role and Responsibilities of TVIs in Influencing Language Development

Some of the interview questions were designed to reveal TVIs' perception of their responsibilities in influencing the language development of young students with VI and DD. At least four different TVIs strongly emphasized the importance of targeting language in their practice, such as "language is incorporated with everything that we're doing," "vision plays a strong role in language," it's pretty darn important what we do in preschool as a TVI," "when it comes to language development, we play a huge part."

TVIs understand how vision may impact the child's ability to learn the language. Most of the participants see themselves as facilitators of language. TVIs acknowledged that language learning is different for children with VI and DD because they are unlikely to learn incidentally. They referred to "incidental learning," or the unplanned language learning that occurs when typically developing children interact with others within their daily activities and routines. TVIs acknowledged that addressing language for children with VI and DD would have to be more intentional or deliberate.

> **Diana:** I think it's really important [TVIs role in language development] because of that incidental learning piece. We need to be able to support those kids and language has everything to do with that. So, I would say it's pretty darn important what we do in preschool as a TVI.

Like Diana, Emma discussed the importance of her role in addressing language gaps.

> **Emma:** I don't see my role as much different than the classroom teacher. I think it's facilitating conversation and being present in the moment, catching those language gaps and having discussions about it very similar to what the classroom teacher is doing with our students that have more severe visual impairments total. Our job then is to fill in the big concept gaps, because you can't develop language around things that you truly don't understand.

Emma described her approach to language instruction using TVI specific terminology while (e.g., concept gaps, providing accommodations, and connecting between learning and vision). Like Emma's, Grace acknowledged the TVIs' and SLPs' approach to language is different.

> **Grace:** It is insane the power of vision in language development, and I can really see that with my own kid, so I think you really need a TVI that understands how strong a role vision plays in language. They can either ask questions, or they can try and address it from the vision standpoint, like concrete experiences, and repeated descriptive language and things like that, that really overlap a lot with what an SLP might be working on. But I think the approach for kids with VI and DD is going to be very different from a TVI versus an SLP.

Olivia reinforced the idea that there might be an overlap between the roles of SLPs and TVIs.

> **Olivia:** I feel like language is incorporated with everything that we're doing. So not necessarily like their IEP goal. Language all day, every day from when they come in the morning to you know, when they leave.

As a lead teacher and a TVI, Olivia described a sense of responsibility for her students' progress. For example, she sees herself as a facilitator of SLP's suggestions in the classroom.

Olivia: I think my role is, first I need to look at their IEP and what their needs are first, and then collaborate with all the other therapists and I do facilitate what they're asking me. And I think that is my role, too, because they only see them once a week when my students see me five days a week and so, it has to be on me to follow through with what they're trying to implement. So that is on me too. And I'm in charge of, you know, IEP goals as far as their vision skills, self-help.

Anna also feels responsible for "carrying it over" SLPs' suggestions.

Anna: I think the teaching staff (TVI and assistants) has more roles with those students pretty much all day. So, I think they rely a lot on our support and our help to incorporate those goals and facilitate them and for the child to make progress. Sometimes they only have the SLP for 30 minutes a week and that's not very much direct time. A lot of it is going to be us carrying it over and implementing it in the classroom and, kind of helping that child progress, because you're spending the majority of the time with that student.

The TVIs' comments above show that they value their involvement in young children's language development with VI and DD. In comparison to other TVIs, Alice indicated her primary role as "ensuring access" in language development.

Alice: I think our role is to ensure access, and I am making sure that the language supports are in place are accessible to the student. I feel like that's our number one.

I think the student can't develop language if they don't have access…like if I'm showing them a book from 20 feet away with black and white illustrations so big. They're not picking up nearly as much language as a sighted student is looking at as a book.

Like Alice, Charlotte provided a tiny description of her language development role as an "expectation." She didn't feel adequately trained, and she expressed her lack of training several times during the first and second interviews.

> **Charlotte:** Well, it was definitely expected of every team. Whether you are a third-grade classroom teacher or a TVI, or a special needs teacher, you are expected to be aware of how these children were learning their language.

When asked specifically about young students with VI and DD and her primary goals, she responded,

> **Charlotte:** I don't think my primary responsibility as a TVI is language acquisition. My primary responsibility is to give them the skills to be successful and independent as they can be. A great braille reader or being able to pull their pants up and down or to be able to feed themselves. That's a thing based on their abilities. I mean just helping them be as independent and as productive of a person is, they can be, so everybody's got something.

Charlotte discussed and explained her role predominantly as teaching independent living skills (e.g., dressing, hygiene, money management etc.), which is part of the expanded core curriculum. Still, she did not mention any role regarding communication skills, which is also a component of the same curriculum.

> **Charlotte:** I don't think many TVIs, I hope, I could be wrong but…think that much about influencing language. I think I was thinking more about influencing their concept development, getting ready for Braille, getting them ready for daily living skills, more than language. I guess I'm I haven't really thought about it that much.

In conclusion, four out of seven TVIs clearly expressed the significance of their role in influencing the language skills of young children with VI and DD. They are aware of SLPs' role

in language, and they want to make sure that students' objectives are met effectively by taking full responsibility as a lead teacher. Anna is an itinerant TVI, but she still described her involvement as "pretty darn important" in influencing language development. Charlotte, who is working in a non-profit organization, had slightly different opinions than everyone else. She is the most experienced TVI among the participant pool.

SLP in Charge of the Language Development

When TVIs described their role in influencing language skills, I wanted to understand how they define their role in relation to other professionals. Depending on TVIs' educational service model, they had different experiences, and most of them said the SLP is "in charge of" language skills, and they collaborated with the SLP at least once a week. The TVIs' quotes below showed me that the dynamics of professional relationships play a tremendous part in their understanding of roles and responsibilities supporting the language development of young children with VI and DD.

> **Diana:** It comes down to that, like, who's going to take ownership of this kid? I have an SLP right now, she's got it. Like, these are her kids. She knows what she wants to do with them, and she just checks in with me. I've had others who just say, Well, I don't even know what to do. Can you select the goal for me? Which is completely not appropriate.

Diana discussed the term "ownership" a few times during the interview. It seems that if the SLP does not take responsibility, as an itinerant TVI, she would not expect much support from the SLP. However, she still accepts that SLP has the most influencing role in targeting language development.

Diana: So really, it's that the SLP is in charge of the language piece. But before they move forward with their strategies, we talk about whether that's going to be functional or not for a kid who's visually impaired.

Diana's and Grace's statements were quite similar, but as a lead teacher Grace pointed out that she has more instructional time with her young students with VI and DD.

Grace: I'm assuming that they have an eligibility for speech language services, then for us, the SLP is definitely in charge of the language development and the language goals. However, because I'm the classroom teacher, I'm there four days a week with the kids, and the SLP only sees them once a week. Typically, they give the team a strategy or two and suggest ways to implement it, so there is more practice.

Like Grace, Anna as a lead teacher and a TVI, had similar perceptions and experiences about the SLP's role.

Anna: A lot of the times, like the speech and language pathologists, they might kind of teach us or go over, you know, specific goals or strategies or ways to help teach the student with when we're with them the whole time. So, there's a lot of collaboration.

Olivia also perceived her and the SLPs' role as closely connected.

Olivia: I think that with the SLP, our goals are pretty intertwined. I think that probably the SLP I am collaborating most, and I have a pretty tight ship here.

As a resource room TVI, Emma spends far less time with each young child with VI and DD in her school. She also shared the importance of collaborating with the SLP to meet the child's language goals.

Emma: The SLP has the instructional knowledge, and she comes in to assess language and then provide feedback to us [the special education teacher and Emma] for what we

should do throughout the rest of the week…she can make a determination about what they need and then keep the classroom teacher in the loop…I'm only with [the students] individually 15 or 20 minutes a day. And so, she has more time where she's able to implement.

All lead TVIs emphasized that they talk with SLP and apply their strategies in the classroom with the support of assistants. As a resource room TVI, Emma is somewhat an outside observer, and she provided similar thoughts about the lead teachers' role in her school. It seems TVIs with or without the lead teacher role have similar perceptions and responsibilities regarding the importance of collaboration with the SLP. Then, I asked Alice, "Who has the most influencing decision-maker role in language development?"

Alice: It's the speech language pathologist. But again, I would need to make sure. The speech language pathologist makes a goal for WH questions. Okay, so then I'm going to look at her objectives. I feel like they might make the goal, but then we have to make sure to help them make the materials for it or help …make sure whatever they are using is accessible to the students.

Alice primarily described her role as “ensuring access.” I prompted her a few more times to hear more about language development, but she explained her role in making things accessible for students. For example, she provides blank and simple backgrounds to increase visual access and uses tactile objects. Charlotte, who is working for a non-profit organization as an early interventionist TVI, usually has sessions with parents and no one else present. She attends monthly board meetings and exchanges suggestions and tips with other professionals.

Charlotte: I don't know that I've actually learned a lot from these meetings [IEP and Board meetings] about how to influence language. Yeah, I don't. I mean, I think I've

learned some information from the speech-language pathologist about speech articulation and vocabulary teaching and pronunciation, but yeah.

Charlotte expressed her feelings about working alone. “So, you've not been itinerant before what the life of an itinerant, we crave companionship, I mean, we're kind of on our own.” Charlotte acknowledged her daily responsibilities might not involve a great amount of collaboration with other professionals. In conclusion, all TVIs expressed that SLPs have the most instructional knowledge and are primarily responsible for addressing the language development of young children with VI and DD. However, their overall experiences with the SLP were varied. Itinerant and lead TVIs had similar experiences and perceptions about taking SLPs' suggestions and implementing them with the support of educational assistants.

Student Goals and Teaching Strategies TVIs Use for Influencing the Language Skills of Young Children with VI and DD

During the interviews, TVIs were asked to reflect on their practice related to influencing the language development of young children VI and DD in general and in relation to a specific child on their caseload. Without any questions and prompts specifically about literacy instruction, several TVIs referred not only to teaching language but also literacy. Language and literacy skills are some of the major components of early childhood development (Fellowes & Oakley, 2011). Literacy is connected to language skills but involves the ability to read and write. When specifically describing language development of young children with VI and DD, all participants prioritized teaching conceptual knowledge, such as building a strong connection between concepts/items and their names, description, and how to use them in their daily life. Their efforts to teach concepts varied and they provided six different language strategies (see Figure 8).

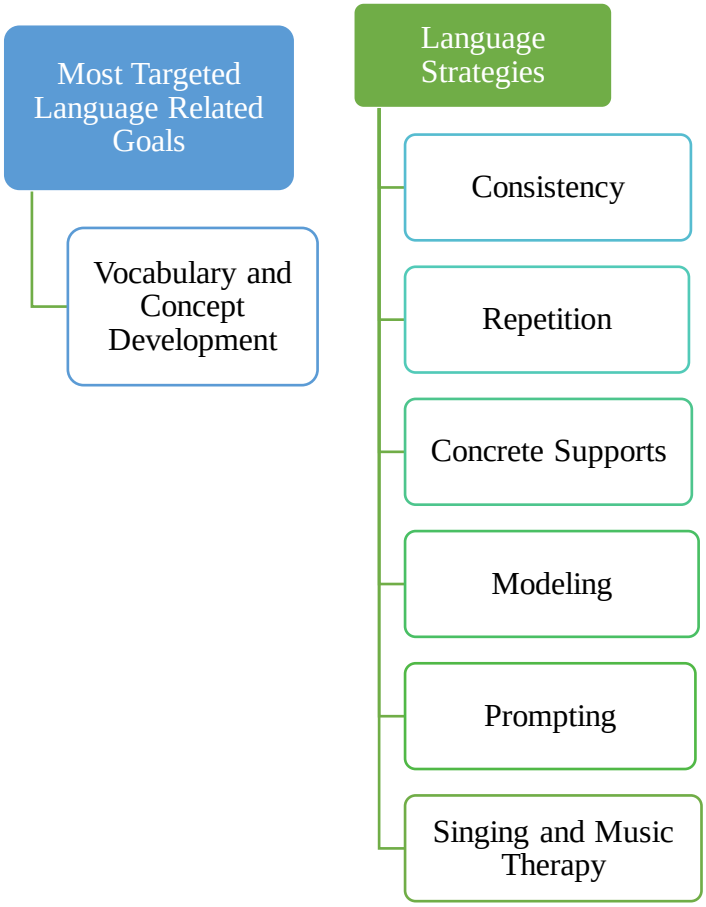

Figure 8. Language strategies and student goals.

Frequently Used Language Strategies

The term concept development refers to understanding the characteristics of an object, directions (e.g., left, right, etc.), and its relationship with other objects (Jacobson, 2013). In terms of content, TVIs primarily focused their language instruction on concept development in relation to everyday objects. For example, Emma based her decision on concepts to prioritize by identifying the next most important skill for the individual child.

> **Emma:** If we're moving past safety and it's a child who's, you know, higher functioning than that. What's the most important thing, for them to one day have a job…we keep going with the most important for safety well-being and progression and trying to move in that direction.

Grace was the only participant who used specific language terms. She was one of the three TVIs who targeted language-related goals other than concept development. Olivia, Charlotte, and Grace mentioned teaching the child to make requests with or without AAC. Grace was also attempting to increase the number of words expressed or understood in a phrase or sentence. All seven participants either directly or indirectly worked on concept and vocabulary development to ensure that young children with VI and DD can distinguish items/concepts clearly.

Table 7

Strategies TVIs Use to Influence Their Young Students' Language Development

	Alice	Anna	Charlotte	Diana	Emma	Grace	Olivia
Modeling				X	X	X	X
Prompting		X			X	X	X
Concrete Supports	X		X	X	X	X	X
Consistency				X		X	X
Repetition	X			X		X	X
Singing and Music	X		X			X	

TVIs explained several strategies that they typically use during instruction: modeling, prompting, concrete supports, consistency, repetition, singing, and music. Table 7 details the strategies that at least two participants mentioned to target language-related skills. Other less frequently discussed strategies are included in the quotes throughout this section.

Modeling, Prompting, and Concrete Supports.

TVIs frequently use three strategies (e.g., modeling, prompting and concrete supports) in influencing language skills. Grace, Anna, Olivia, and Emma used prompting techniques while teaching young children with VI and DD:

> **Grace:** So, a lot of with that kind of strategy is like, using a tactile prompt, to get them to let them know that it's their turn, but then also, you know, putting their hand on me, when it's my turn, to get that kind of reciprocation… A lot of modeling and prompting, um, I may over prompt, especially for kids with, like, echolalia. But I just had the experience in the past that I been able to really break kids out of that echolalia, when I do end up prompting, a lot.
>
> **Anna**: …So, kind of knowing like, when to give prompts, and kind of like when not to, because sometimes less is more.
>
> **Olivia**: …you know, and prompting maybe like five times like in an hour…
>
> **Emma:** …understanding that fluidity of sentences without me needing to prompt him.

In the above quotes, TVIs used prompting to increase the likelihood of a correct response during their instruction. Grace specified using tactile prompts and she used frequent prompts to reduce the symptoms of echolalia. Lastly, Anna emphasized that sometimes it is better to use prompts less frequently. Grace, Emma, Olivia, and Diana also mentioned that they use modeling during their instruction.

> **Diana:** It's not directly a speech thing, but we'll use what we call hand under hands. Because we want the children to know that it's okay and safe to touch things and then but also really trying, especially when we're working on trying to get that increased sentence, really making that concrete, making sure that there are goldfish right there.

Emma: Increase the complexity of the books you read. You increase the number of words in a question, and you can start to see how comfortable the child is with you…I think it goes great if you can hand under hand with the book.

Grace: I'm really modeling the sentences, even if it is just being like say, “I want goldfish."

Olivia: Modeling for sure. That's huge. We do hand over hand. And we, you know, yeah, positive reinforcement and praise. We do scaffolding.”

Some participants specifically used hand under hand modeling. Basically, they perform the activity (e.g., holds an item) while the young student’ hands rest on top of theirs, helping the student feel what the TVI is doing. Diana, Grace, Emma, Olivia, Alice and Charlotte provided concrete supports for young children with VI and DD.

Diana: The tapping, like I, let's say my student's name is Bob, and I'll tap Bob, I'll say, hey, Bob, and so Bob knows I'm talking to him and then I try to make sure he feels when I talk about myself that I'm tapping myself to work on that pronoun usage, which I know takes quite a bit of the year to get through. Other things I'll do is we'll sit down and really have a more physical hands-on experience with things.

Grace: She needed tactile concrete experiences, and…

Emma expressed that structured exposure with hands-on activities are important for language development.

Emma: I think the greatest thing they could need is greater exposure, more than the typical child. We assume they're exposed to all of these things. I think it's so important that we create just endless opportunities for them to explore things that everyone else is exploring visually, and whether that means like we spend a lot of time outside doing

hands-on activities, that's more important to me than I think you know some time on the carpet for these kids. The structured exposure with the language we know they need to learn from someone trained to do that.

Olivia: Because repetition, sometimes we use the same language and like cards for like, four months, until they are finally it's like, concrete, you know, and then we move on.

All participants suggested that young students with VI need to interact with real objects to develop a clear conceptual understanding. Olivia provided instruction involving concrete experiences with new vocabulary.

Olivia: Well, today…we made polar bear pancakes, and the kids had to go and find a spoon in their kitchen drawer. You have the bowl in front of you, and you have to say, 'the bowl in front of me' and you're going to feel your hand go in and you're going to feel flour…smooth and soft, and it's not sticky. Do you feel that? Can you put your left hand in there?'…We use a lot of vocabulary like describing things that are like wet or dry, or they're sticky, or bumpy. There's a lot of language that encompasses that, especially for kids who are blind.

The detailed description of Olivia's instruction included a few steps that may influence her young student's language development, but it is unclear if explicit instruction was provided as instruction focused on questioning for expressive/receptive labels with no mention of feedback. For example, "asking the child to find a spoon" questions conceptual knowledge, receptive language, and whether the child can comprehend the TVI's sentence. Another example was asking the child to express the name of the item and its location. Alice also described concrete supports, including a visual then board to help students with VI and DD understand the concept and provide a predictable schedule of events.

Alice: It's basically two pictures and an arrow and it shows the kid what is next. Okay, I say the words for vocabulary then you will repeat after me first we're going to have circle time then you can play with Play Doh.

Charlotte discussed the importance of "real world experiences."

Charlotte: Always try to use real objects real world experiences to help them facilitate learning the language. When you are talking about a recycling bin, what is the recycling bin. I would get the recycling bin and I would actually put the child in the recycling bin to see how big it is to get the dimensions of it. He'll never forget what our recycling bin is.

In conclusion, modeling, prompting and concrete supports are the most frequently used strategies influencing language development of young children with VI and DD by these teachers. Some of the TVIs above emphasized the importance of consistency and/or repetition to increase retention.

Consistency and Repetition.

Four TVIs mentioned using consistency and repetition in their practice to support language development.

Olivia: So, using language like, what comes next helps them a lot like okay, but using that same consistent vocabulary across the board helps a lot…. this is the dog and then maybe talk about that over and over and over.

Grace: She needed that repetition, repeating, repeating of that experience with the same language. And all of a sudden, she started just taking off that part… I probably embedded a lot of my kids' language targets into my circle time routine. In my circle time routine was like, pretty scripted, like I just pretty, you know, it was the same order of things, pretty much said the same thing every time so that they learned.

Diana: …but just you know, using that repetition of this is an apple or, you know, this is a different shape to an apple and using that continuation of repetition.

Alice: …It would take maybe 10 minutes [of repeated instruction] or so to like to understand what we said and do it.

In the above quotes, TVIs used repetitions with consistent vocabulary to increase students' understanding of concepts with maximum retention.

Singing and Music.

Three TVIs (Alice, Charlotte, and Grace) used music to encourage language. For example, Alice said, "Music, in general, is just I can't believe I haven't talked about this already. Just because I feel like music and language go hand in hand**."** Alice was working with a young student with VI and DD who had a neurological vision loss due to traumatic brain injury. Alice made a greater impact on the student's educational progress when she started singing and using music to convey her message and instruction.

Alice: It was just like some other part of the brain is just lights up when you sing… and for that student, we actually ended up getting her music therapy. Because the music was so powerful for her.

When I asked about using language strategies, Charlotte provided similar responses.

Charlotte: When teachers are doing songs, and I love music to me is one of the best ways to reach a child and understand you. Because when you're singing, you are not threatening. It's a happy sound. I think it's like a universal language.

Lastly, Grace used her student's favorite music and replaced some words to teach concepts. Using her student's favorite song helped the student to remember concepts and increased her motivation to participate in Grace's instruction.

Less Frequently Used Strategies

Wait time, descriptive talk, and structured exposure with language were the less frequently discussed strategies during the interviews. For example, Anna emphasized the importance of descriptive talk.

> **Anna:** …just different language strategies in the classroom, we do a lot of like, prompting and modeling. You know, giving descriptions, we, you know, describe a lot, what we're doing, what we have what's around. So, we are using a lot of language. But we also have to make sure that we're not using too much language or too much at a time, because that can be very overwhelming for a child.

Olivia also suggested that wait time is important.

> **Olivia:** So, you got to wait, that's a hard one, to slow it down. I think that's really hard for some teachers and assistants, just, they're so it's so fast, you know, you got to like, you got to really wind it, slow it down by like, times four. Because everything is so much slower with these kiddos."

Similar to Olivia, Charlotte highlighted the importance of "giving time to process" and avoiding speaking for the children to prevent learned helplessness.

In summary, based on my analysis I conclude that most participants have shared common strategies they use to influence the language development of young children with VI and DD. After describing their strategies to address language, TVIs discussed the number of factors that affecting their self-confidence in their teaching practice in the area of language development.

Factors Influencing TVIs' Self-Confidence and Self-Efficacy in Targeting Language Development

Self-confidence refers to the strength of a belief that one can rely upon their own judgment and abilities, but it implies a person's trust of their own resources or strengths. The term that better describes self-belief in teaching is self-efficacy; it's the person's judgement about his own ability to follow a needed or desired course of action (Cramer et al., 2009). I used the term "self-efficacy" specifically for the self-efficacy scale and the term "self-confidence" for the interviews. The reason for using two different terms is to reflect the use two different forms of collected data (i.e., interviews and self-efficacy scale).

Table 8

Survey Results with Mean, Median and Mode

	Alice	Anna	Charlotte	Diana	Emma	Grace	Olivia	Mean	Median	Mode
Q1	3	5	4	4	4	5	3	4.00	4	4
Q2	4	3	5	4	3	3	4	3.71	4	3
Q3	3	4	4	4	3	4	4	3.71	4	4
Q4	3	3	4	3	3	4	4	3.43	3	3
Q5	4	3	5	4	4	4	5	4.14	4	4
Q6	3	3	3	3	3	4	4	3.29	3	3
Q7	3	3	5	3	4	4	4	3.71	4	4
Q8	4	3	5	4	4	4	4	4.00	4	4
Q9	3	4	5	4	4	4	3	3.86	4	4
Q10	3	3	4	3	4	5	4	3.71	4	4
Q11	3	3	3	3	4	4	4	3.43	3	3
Q12	4	4	3	4	4	4	4	3.86	4	4
Mean	3.33	3.42	4.17	3.58	3.67	4.08	3.92	Overall Mean		
Median	3	3	4	4	4	4	4	3.74		
Mode	3	3	5	4	4	4	4			

I asked TVIs to complete the adapted self-efficacy survey to triangulate their responses with the interview transcripts and to measure their self-efficacy scores related to the language

development of young children with VI and DD (see Appendix G). All participants completed the scale with the demographic survey before the interviews began. In the introduction page, I informed the TVIs to mark one of the five responses ranging from (1) none at all, (2) very little, (3) some degree, (4) quite a bit, (5) a great deal to the 12 survey questions. The table above shows the self-reported self-efficacy scores (e.g., mean, median and mode) of seven TVIs (see Table 8). Means ranged from 3.33 to 4.17 indicating teachers felt "some degree" or "quite a bit efficacious." For example, the fifth question was "How much can you influence language development of children with VI and DD during the time you work with them?" The majority of the participants reported four points or higher. The sixth question was "To what extent can you influence the lead preschool teacher's use of language practices appropriate for children with VI and DD?" Most of the participants reported the score of three. The participants' answers to the questions above in line with their roles and responsibilities. They may feel more self-efficacious influencing language development, but less self-efficacious influencing their colleague's language practices, which they may see as not a part of their role but rather one of the SLPs' task and duties. Ratings on items that reflect the application of strategies were a bit lower (e.g., questions 3, 4, 5, 7, 8, 10, 11). Several participants hesitated to provide sample artifacts. For example, the participants had a difficult time selecting artifacts, asked a lot of questions about the type of artifact.

In this section, TVIs' quotes are divided into four distinct categories, which seem to affect TVIs' self-confidence in influencing the language development of young students with VI and DD. Student success, collaboration, teaching experience, and inadequate language training were categories that may have contributed to TVIs' self-confidence (see Figure 9). TVIs expressed the existing challenges in influencing language skills, such as inadequate language

training, teaching young children with VI and DD who live in a household that speaks primarily another language, and lack of resources. Each category was explained in the next few paragraphs with details to provide a rich description.

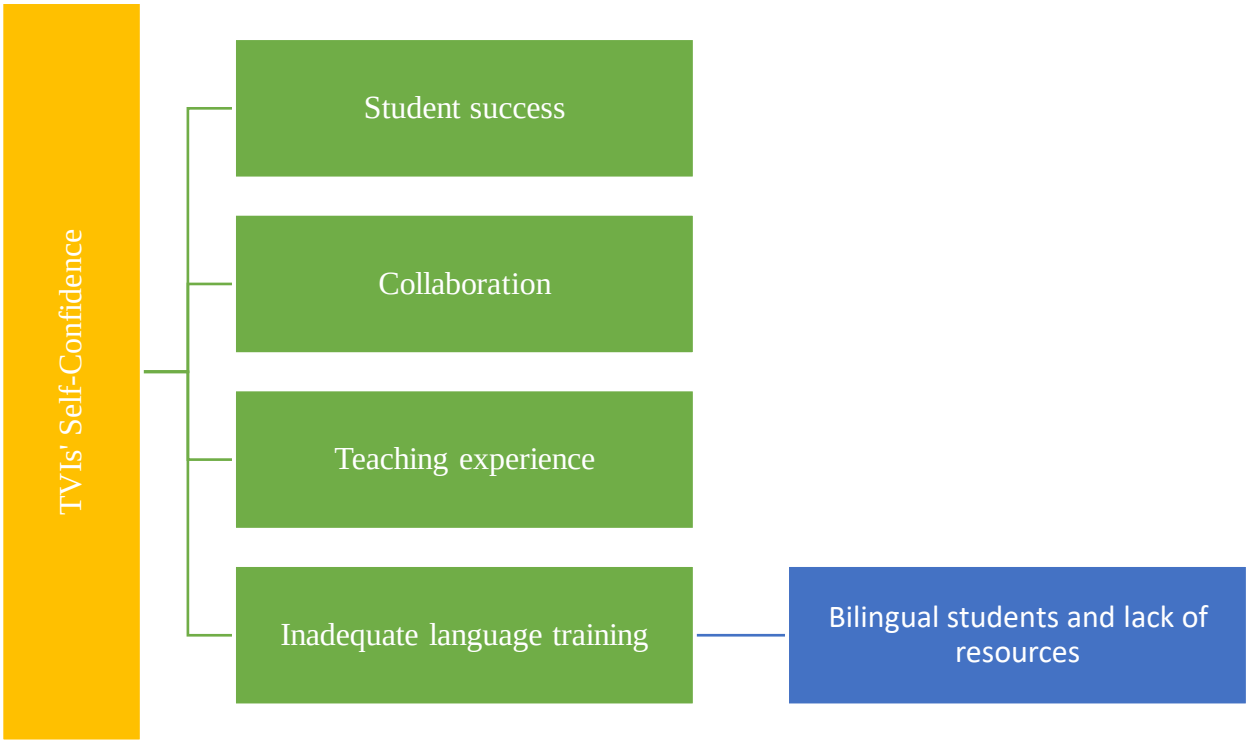

Figure 9. TVIs' self-confidence in influencing the language skills of young children with VI and DD.

Student Success

Six out of seven participants expressed that they had an inadequate level of language development training in college, but this situation did not prevent them from feeling confident in influencing language skills. Positive effects of witnessing student progress in language skills were among the major categories that emerged from the interviews. Teachers experience a variety of emotions during instruction, and their confidence may be predominantly influenced by their colleagues and students (Reeves et al., 2017). For example, Diana said that "when I see success from a child, absolutely skyrockets my confidence." Similarly, Anna expressed that

“When I am hands-on and working with the child, I feel confident in my teaching," and I asked, “What makes you feel this way?” She said, “I think just like the success and the reaction I get from the students.” In addition to students’ success, Two TVIs emphasized the importance of affirmation with their peers and receiving positive reactions.

> **Alice:** A lot of times, I'm seeing what they're doing [lead teacher and SLP] and I'm seeing what's not working. Once I change that [strategies, educational practice] they notice that difference in the child. Obviously, having a child be successful is what increases confidence.

Alice's example shows that confidence grows from positive outcomes, in fact, Grace made a similar point:

> **Grace:** I am definitely one of those types that needs reassurance from the people I work with [SLP and educational assistants] like “Hey, good job!” and seeing the child progress, and then just a little unexpected sentence like “I really like being in your classroom." I think that's really where the confidence comes from. Not my language training, not necessarily feeling like I know what to do, but having to actually see that it makes a difference.

Alice, Anna, and Diana have the lowest self-efficacy mean scores of 3.33, 3.42, 3.58, respectively. Additionally, Grace who has the second highest self-efficacy mean score still expressed that her self-confidence was influenced by making a difference in the children’s progress. In summary, it seems one of the important variables in influencing TVIs’ confidence is noticing that they “make a difference," and their positive contribution is acknowledged when they or their colleagues notice an improvement in students’ language outcomes.

Collaboration

TVIs reported varying accounts of the benefits associated with collaboration. These words emerged from the interviews: “hit and miss," and “butted heads,” and "close friendship." Two participants had some difficulties working with other professionals in developing language skills of young children with VI and DD.

> **Charlotte:** I do work with teams and we have an SLP but, there have been times when I have really butted heads with… actually the SLP was trying to blame the child's language difficulties on his vision and I was like, absolutely not. It is not a vision thing it is a cognitive brain issue and fortunately, my supervisor came to bat for me.

Charlotte confronted the SLP to address the relationship between language difficulties and VI. Charlotte also mentioned a positive experience with another SLP. “I had consulted with the SLP, she was very open to hearing what I had to say about the vision piece of it and that's when I recommended starting with real objects." The SLP’s willingness to consider new ideas about VI led Charlotte to have a positive collaboration experience. Charlotte has the highest self-efficacy mean score among all participants (4.17).

> **Diana:** I would say the collaboration piece is hit or miss and it really is dependent on the team. I have a team who like, wants to sit down and lesson plan with me right now, and wants to develop those language things for that child. Whereas I've had teams who are just like, well, I don't know anything about blindness, so I'm out. This child is not mine, [he/she] belongs to you now, but the child belongs to the team, not only to the TVI.

Diana expressed the complexity of collaboration. One thing united both of these TVIs, and it was their service model. Diana worked with multiple schools and IEP teams as an itinerant TVI, and Charlotte worked for a non-profit organization. Like in the itinerant model, Charlotte frequently

deals with different families and teams to provide early intervention services. Their collaboration experiences caused mixed feelings, reflecting more limited time cultivating relationships with SLPs as their contact is relegated to meetings. All participants seemed to agree that collaboration has an important role in their daily responsibilities. The other five participants reported positive experiences with collaboration that helped further their understanding of how to effectively address the language skills of their young students with VI and DD.

> **Alice:** Up until this point, when I would read a book, I obviously used many props and physical things for the students to have access. The lead teacher realized that this student when they were labeled [props, physical things] did a lot better than when they were not labeled so I liked that information.

Collaboration with the lead teacher made a direct and positive impact on Alice's instruction. Emma had a similar experience with the SLP.

> **Emma:** I was saying some old terms that were from when I was a kid. And she [SLP] was like, "We don't say that anymore." …that collaboration, even with some of the feedback that was corrected made me feel a lot more confident.
>
> **Anna:** I think it makes me feel better but that could just be because I like collaboration and teamwork and things like that. So personally, I think that kind of helps you feel like more confident and more of a team and working together.

Emma and Anna, both of them, expressed their positive experiences of collaboration.

> **Olivia:** My SLP really helped guide me when I became a TVI. Because I really was just like, I don't know, I taught kindergarten, regular ed, pretty much, you know, and it was vastly different, was quite the shift…I couldn't do my job without all of them [IEP team]. They bring so much to the table and they, you know, inspire me…we think of next steps

like so say that they [students] need to learn Braille…we all talk about what's next or what does this kid need? Where are they at? How do we get them, you know, to reach the IEP goals?

Olivia emphasized how much she learned from participating in IEP meetings and talking with other professionals. Her words such as “inspire me” and “couldn’t do my job without all of them,” suggest collaboration had a significant impact on her confidence.

> **Grace:** I taught for three years at a preschool in Kansas City and have developed a very close friendship with the SLP. We would spend way too long after school just like talking about VI, autism and language development, like, wow, couple of hours a week. I think everybody on the team [IEP] has the freedom to work on language needs, but I think, I'm more comfortable taking that liberty, perhaps then maybe some other teachers that really might just wait for the SLP to give them direction on what to do for that particular child. Whereas I might kind of know that I can implement it.

Grace’s use of the words "taking the liberty" while making language related decisions suggested confidence in her ability to impact language development, whereas other TVIs were slightly more cautious of their word choice. It is also important to remember that Grace has a Ph.D. degree in special education, which might give her confidence in her position or around her colleagues and she obtained one of the highest self-efficacy mean scores with 4.08. Lastly, most participants felt more confident after receiving the SLP’s suggestions and guidance.

Teaching Experience

According to Bandura (1994), one of the four primary sources of self-efficacy is mastery experiences. For example, new teachers may take teaching experiences as a challenge and feel more confident if they successfully complete this challenge. Like described in Bandura's self-

efficacy theory, four TVIs noted the impact of teaching experience on understanding the varying needs of students. For example, Alice noted:

> My first year, I would have been like not confident at all like, I have no idea, but I feel like my confidence has gone up. Over time, now I am in my fourth year I feel fairly confident, but at the same time. I know no two children are the same. I know there's always going to be more stuff to learn from the students that I'm teaching.

Alice had the lowest efficacy mean score among the participants (3.33). Alice has a master's and bachelor's degree in visual disabilities education. She has been working with young children with VI and DD for more than four years. In Alice's case, it seems years of teaching experience influenced her self-confidence. She explained that she feels more competent to work with students with VI and DD now compared to the previous years.

> **Alice:** My first year I had students who had developmental delays and you know, obviously I tried my best… I wish I had those students now; do you know what I mean like I know a lot more now than I did when I first graduated from college.

Like Alice, Anna expressed the benefits of teaching experiences and more training over the years; her self-efficacy mean score was 3.42.

> **Anna:** The first year, I was just surviving. I just kind of, you know, getting the hang of everything. So, definitely over the years, and having more experiences and more trainings and working with different students, you know, all of our students are not the same… You are always trying to figure out what works best for each child.

Diana, who had a self-efficacy mean score of 3.58, explained that her experiences have taught her to notice "language patterns" among students.

> **Diana:** I've been able to see those language patterns in teaching... so, I've gotten to see how child development works and how it is not, you know, what is consistent between them and what is not. So, experience absolutely does help 100%.

Grace's mean score on the self-efficacy measure was a 4.08. Grace has a Ph.D. in special education, her best friend is an SLP, and she spent a significant amount of time with the SLP discussing the language skills of young children with VI and DD. She has eight years of teaching experience as a TVI and as a lead preschool teacher. Grace provided a different perspective on the relationship between self-confidence and teaching experience. She expressed that TVIs with years of teaching experience may better understand students' needs than novice teachers.

> **Grace:** I do think in terms of like the needs of the students, I think you really need a TVI and, you know, unfortunately, depending on the training program, or the age experience of that TVI, you know, they may or may not understand it [language needs of young students with VI and DD].

In addition, one TVI explained the importance of training or feedback from more experienced colleagues. Emma has been working as a TVI for just over a year.

> **Emma:** I think it will [confidence] just come from experience overall and having other people come in and give me the feedback. I can't fix that on my own [influencing language skills]. I need other people to come and show me because I haven't done it.

In conclusion, years of teaching experience may positively influence TVIs' confidence in influencing the language skills of young children with VI and DD. This positive influence may stem from developing a higher level of understanding students' needs and noticing language patterns among them.

Inadequate Language Training

TVIs reflected on their college education in relation to the language development of young children with VI and DD. Four out of seven participants expressed their lack of training in language development. For example, Anna repeatedly emphasized:

> I guess there may have been a touch on some communication stuff just depending on like students with multiple disabilities and some other communication, but like a specific class or in order to how to teach and things like that. No.

Anna's self-efficacy mean score was one of the lowest as 3.42 points. Anna has a bachelor's degree in elementary education, and a master's from a blindness and low vision program. She has been teaching young children with VI and DD for more than eight years. Similar to Anna, Olivia noted:

> I really don't think I have; I didn't take like specific class work…but during school you know, we do a lot of vocabulary like describing things that are like wet or dry, or they're sticky, or bumpy. There's a lot of links to language that encompass that, especially for kids who are blind. But, yeah as far as like schooling, I don't think I took anything like that ever.

Olivia mentioned vocabulary training for targeting concept development. Similar to Olivia, Charlotte stated her confidence in learning to teach concept development: "I feel very confident in my skills as teaching concept development because I do enjoy working with younger kids. But as far as language and language development. I really never thought a whole lot about it." Charlotte had the highest self-efficacy mean (mean of 4.17 out of 5) on language development for young children with VI and DD. She was the most experienced teacher, with 16 years of practice. There was a discrepancy between Charlotte's responses in the interview transcriptions

in relation to self-confidence and her self-efficacy scale results. After discussing language, strategies, and TVIs' role in language development, Charlotte realized that she doesn't feel confident at all: "Well, actually, after thinking about it. I don't know that I'm all that confident in influencing language because the course that I had was 30 hours in the summer [took a professional development course remotely related to language development]. That was a total waste of time. I guess." Emma questioned all her college courses in general and their benefits to her current role.

> **Emma:** I've taken like beginning teacher courses that were not at all applicable to me things on working with a whole classroom of students. I had to take four different classes. That were mandatory for me. That did not apply to anything I do with my students just like, this is classroom management, and I was like, I have one kid.

She later continued how the TVI training program prepared her for children with severe disabilities and children with VI, but not "in that kind of middle space" that she refers to as children with VI and DD.

> **Emma:** I know that we focused a lot on teaching braille instruction and kind of the phonics with that, but we didn't spend a lot of time focusing on what to do if there was a developmental delay…We did spend time working on what to do with more severe disabilities but not in that kind of middle space and that's where all my kids are.

Four TVIs attended TVI training programs that taught them about concept development but not language broadly. Specifically, Grace acknowledged having more training in language development.

> **Grace:** I do remember taking the class for my bachelor's that was specific to language development and young children. Um, I still have the textbook from it…I feel like I

> learned more of that kind of stuff in some of my special ed classes, but if they would have been more in terms of just whatever the context of that special ed class was, like, you know, teaching math concepts.

Grace has her bachelor's in early childhood and VI, master's in visual disabilities, and Ph.D. in special education. Additionally, she mentioned the significance of participating in conferences: "I think probably some of the more eye-opening like, specific, like language moments that I've had were at conferences."

Lastly, two participants (Diana and Alice) had language development training in early childhood either due to their bachelor's degree or their TVI training program coursework that allowed them to select a focus on early childhood. In conclusion, TVIs who only graduated from a TVI training program and did not take early childhood classes may need more training in the education of young students with VI and DD in general.

Bilingual Students and Lack of Resources

TVIs discussed additional topics specific to their teaching contexts that also influenced how prepared they feel to address the language needs of young children with VI and DD (see Figure 10). They described the challenges of working with bilingual students and lack of resources.

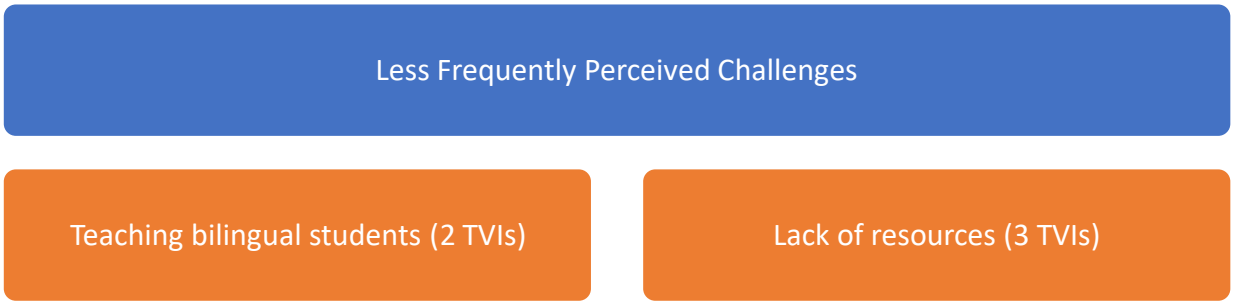

Figure 10. Less frequently perceived challenges in influencing language skills of young children with VI and DD.

Bilingual Students.

An increasing number of children live in households where English is not the family's first language (National Center for Education Statistics, 2019). Although the interview questions did not specifically ask about bilingual young students with VI and DD, both Emma and Charlotte noted the importance of teaching concept development in the child's home language and English.

> **Emma:** One of the harder things with language development is when our students are learning more than one language at the same time. And so, to explain to my student what a concept is in English. They don't know half the words I am saying in English, then I have to pull them up in Spanish. I don't know if the gap has been filled. He's still pronouncing it wrong. But I'm like, do you actually know what I'm talking about?

Like Emma, Charlotte used the words from the bilingual child's native language.

> **Charlotte:** If the child is bilingual, like most of mine are. I tried to use the word in English and their native language as much as I can. To make sure that if the child somehow does know it in one language and not the other.

Emma later emphasized difficulty assessing the conceptual understanding of her bilingual students. She described feeling unsure if the student learned concepts during her instruction and whether "the gap has been filled." Charlotte had an interesting solution for assessment. She felt that being able to speak Spanish would have helped her address the concept development of her bilingual young students.

> **Charlotte:** …people that have lived out here for a while, have picked up Spanish. I picked up a few words, though, but not that many. I think that would have made me a better teacher, if I could have spoken Spanish.

In conclusion, two TVIs experienced challenges in addressing language development of bilingual young students related to lack of understanding and training in teaching bilingual learners. They are struggling with assessment of conceptual knowledge and teaching new concepts to their bilingual students.

Lack of Resources.

Three TVIs explained that a lack of resources (e.g., real items, communication devices etc.) negatively affects their ability to influence the language development of young students with VI and DD. Olivia, Anna and Diana all mentioned a lack of resources.

> **Olivia:** Having, you know, readily available, like pictures, or having the resources would be really helpful. You know, because that can get kind of expensive.

Anna and Diana specifically referred to cost being a barrier to receiving needed resources.

> **Diana:** I think real objects give students an opportunity to really experience the items and the lesson plan. And honestly, we don't always have the budget or the time to get those things prepped. I think materials can be the biggest piece for me.

Anna had a young student with VI and DD who approximates few words. She thought having a communication device may provide an alternative way for her student to exchange information with others, but she did not have enough resources to obtain this device. She said, “a lot of those can be very expensive.”

In conclusion, few participants experienced difficulties working with young bilingual children and funding seems to be a limitation for purchasing necessary resources in addressing language development. Four distinct categories of factors that seem to affect TVIs’ self-confidence in influencing the language development of young students with VI and DD emerged

from the data. These factors are evaluated and explained in relation to the literature review in the next section.

CHAPTER FOUR

DISCUSSION

The purpose of this study was to gain an in-depth understanding of how TVIs support the language development of preschool children with VI and DD. This study used case study methodology with social constructivism to reveal how TVIs interpret their own reality in school settings. Following two interviews and artifact analysis, four themes emerged from this study: (1) TVIs have a unique role in supporting the language development of young children with VI and DD because of their understanding of how vision can impact children's ability to develop language; (2) TVIs consider the SLP as “in charge” of language development; (3) TVIs prioritized concept development and applied variety of strategies, (4) TVIs had limited training in language development and varying levels of confidence in their ability to impact language development.

TVIs Have a Unique Role in Supporting Language Development

TVIs provide direct instruction, accommodations, and modifications to ensure access to the general curriculum for students with VI. TVIs’ responsibilities may change depending on their students' age (0 to 22) and their role as either an itinerant teacher, lead teacher or specialized skills teacher (Correa-Torres & Howell, 2004, Wolffe et al., 2002). TVIs should be knowledgeable about how VI can affect receptive and expressive communication skills, and they need to apply educational strategies to increase the use of functional language (Spungin et al., 2007).

The majority of the participants described their role in language development in terms of concept development. TVIs prioritized wanting their students to become independent in accordance with the expanded core curriculum (Sapp & Hatlen, 2010). The term independent

living skills is a broad label that includes every essential skill (e.g., daily living skills, basic hygiene, etc.) that a student with VI be able to do without assistance (Lewis et al., 2014). Several participants emphasized the significance of language skills in relation to being able to do a task independently. Whenever I asked a question about using strategies, conducting assessments related to language skills, or teaching new vocabulary, TVIs stressed language related to increased independence. For example, Charlotte said her role was related to "giving them the skills to be successful and independent as they can be." TVIs prioritize assisting their students to become independent because previous studies have shown that young students with VI complete fewer tasks independently compared to typically developing children (Lewis & Iselin, 2002), and that children with VI has moderately low adaptive skills in general (i.e., communication, daily living; Papadopoulous et al., 2011). However, it is essential to note that language development is part of the expanded core curriculum's compensatory access area (Sapp & Hatlen, 2010). For example, concept development, speaking and listening skills, use of adapted educational materials, and communication modes are included in the compensatory access (Guerette, 2014). Every one of the participants discussed concept development, and some of them (e.g., Alice) emphasized the importance of access and adapting educational materials.

Fazzi and Petersmeyer (2001) explained concept development specifically for children with VI as a four-step process: (1) being aware of an object, (2) having a desire to interact with the object, (3) labeling the object with a different type of sentences (e.g., a plastic fork), and (4) categorizing other objects with similar features (e.g., a plastic spoon, fork, and cup). Some steps of this process have been explained in different parts of the interviews with many examples by the participants. The TVIs discussed their role in concept development as providing concrete experiences with repeated descriptive language to close the language gap between young

students with VI and DD and typically developing peers. Therefore, TVIs know that some children with VI have an inaccurate and fragmented understanding of everyday objects (Groenveld, 1990), and they may show delays in forming complex sentences (Pérez-Pereira & Ramsden, 1999).

When TVIs defined their role concerning concept development, several of them emphasized that learners with VI are less likely to learn language incidentally. Typically developing children have multiple unplanned and unintended learning opportunities, but young children with VI need consistent, deliberate, and predictable instruction. A typical classroom is packed with visual displays and artifacts, and TVIs need to be more creative to enable incidental multisensory learning experiences (Metatla, 2017). The participants expressed that they adapt educational materials and use specialized equipment for students with VI to access information independently. Several participants discussed how TVIs are expected to be aware of their students' language-related needs. For example, in Alice's case, she said that students cannot develop language if they do not have access. Alice needs to present the materials (e.g., books, papers) from a specific distance, print size, and color that are appropriate for their visual needs.

In conclusion, TVIs define their role as supporting concept development and adapting materials to provide access for influencing their student's language skills. They give concrete experiences with repeated descriptive language to teach objects and concepts in students' environments. The ultimate aim of their instruction is to ensure that their students require less assistance in their daily life and become independent individuals, but their activities indirectly support language development.

TVIs Consider the SLP as in Charge of the Language Development

Speech-language pathologists (SLPs) are trained to provide services to young children with developmental delays in speech, language, communication, or literacy (Powell, 2018). They can demonstrate the knowledge of typical development from birth to age five and onwards, conducting language assessments for young children, creating plans to implement intervention strategies, collaborating with other professionals or parents, and collecting data to documenting progress (American Speech-Language-Hearing Association, 2016). One of the factors that influenced TVIs' self-confidence in language development is their collaborative experiences with the SLPs. All of the participants of this study accepted that the SLP has the greatest influence on the decision-making role in language development. All TVIs used the SLPs' recommended strategies, and if they were itinerant TVIs, they regularly informed the classroom teacher about their conversation with the SLP. Two important findings emerged from the study in relation to the SLPs: (1) dynamics of collaboration among professionals may determine the quality of collaboration in the school contexts, and (2) SLPs who stand up and take responsibility for the language needs of their young students may cultivate strong relationships with TVIs.

Collaboration is an instance of two or more professionals (e.g., a TVI and an SLP, etc.) working together to assess or implement educational strategies to enhance a child's ability to succeed in school settings (Dettmer et al., 2013). A key component of effective collaboration involves professionals embracing the values of parity and reciprocity (Wright & Kersner, 2004). These two components seem to be limited in some of the TVIs' collaboration experiences. For example, Charlotte described that she had to "butted heads with" the SLP when the SLP "blamed" the child's language delays due to her VI. Charlotte's preference of using two negative words provides an example about the dynamics of her relationship with the SLP. While Olivia

was describing her experience, she used the words such as “inspire me” and “they bring so much to the table.” Her perspective may have a significant factor in cultivating favorable collaboration experience. Research of relationships between TVIs or special education teachers and SLPs are limited. In one example, Gonçalves (2015) examined SLPs perspectives in collaborating with special education teachers and found two barriers that prevented creating positive collaboration experiences: lack of time due to number of responsibilities and lack of willingness to collaborate or low flexibility. Itinerant TVIs (e.g., Charlotte) have to work with multiple professionals, schools or families. Limited interaction time with multiple SLPs may be a factor that prevent building strong relationships. On the other hand, lead teacher TVIs (e.g., Olivia, Grace etc.) had more time to interact with one or two SLPs in a typical school day. Time management (i.e., being flexible and available), has been recognized as a skill required for collaboration (Greenstock & Wright, 2011). School schedule, caseload and professionals’ (e.g., TVIs and SLP) other responsibilities likely to influence their ability to be flexible (Wright & Kersner, 2004).

Diana, who is an itinerant TVI, discussed the importance of taking ownership of her students. She had experiences with different SLPs who did not take full responsibility and left Diana create language goals for children. In order to build successful relationships, having similar perceptions of what collaborative teaming looks like could be a significant factor. SLPs have been found to collaborate in several different ways (e.g., pull-out model, acting as consultants, direct instruction with interventions, etc.), which is very similar to itinerant TVIs' service models (Shaughnessy & Sanger, 2005; Ukrainetz & Fresquez, 2003). If a TVI or an SLP has conflicting perceptions of what collaboration looks like, this may be a sizeable barrier that can cause negative experiences in their relationship. Despite the difficulties, Diana still accepted that the SLP was in charge of the language development piece of their young students with VI

and DD. However, the findings bring another question about the competencies of SLPs regarding assessment and education of young children with VI and DD. For example, in a recent study, SLPs were found to have limited knowledge about cortical VI (Blackstone et al., 2021), studies emphasized the lack of language assessment tools for children with VI (Absoud et al., 2011; Dammeyer, 2012), and most tools are picture-based and not appropriate for this population (Mosca et al., 2015). Some TVIs can be more knowledgeable than novice SLPs in the language development of young children with VI and DD. For instance, Grace expressed that she was working with a new SLP who had no experience with VI. She addressed the echolalia piece independently and provided some suggestions to the SLP from her years of teaching experience and advanced educational background.

In conclusion, the findings of this research show that SLPs have more authority to make language development-related decisions. Still, limited language assessment tools in the VI literature may require SLPs to have a closer relationship with TVIs to make decisions that directly benefit young students with VI and DD. Some TVIs want to see the SLP take ownership and bring more to the table than asking a TVI about language decisions. The two negative collaboration experiences shared in this section were from itinerant TVIs. They work with multiple SLPs rather than one or two in their school, like a lead teacher TVI. Limited interaction time and TVIs' other responsibilities with multiple school districts may prevent them from building beneficial relationships with SLPs. As a result, itinerant TVIs may receive less support and guidance in language development, which may likely to influence their self-confidence in targeting the language skills of young children with VI and DD.

Strategies TVIs Use to Influence Their Young Students' Language Development

Naturalistic interventions are a collection of practices including interaction techniques (e.g., modeling, prompting, etc.) and environmental arrangement (i.e., purposeful placement of objects to influence a child's behavior) that originated from applied behavior analysis (Amsbary & AFIRM Team, 2017). Naturalistic interventions are used in daily routines to support social and language development (e.g., prelinguistic and linguistic communication) of young children with DD and ASD (Franzone, 2009). The participants in this research expressed several components of naturalistic interventions that are consistent with the literature. For example, the TVIs overwhelmingly used modeling, prompting, and concrete supports to influence language development. The participants valued repetition and consistency, which are the vital components of daily routines that are used in naturalistic interventions. Furthermore, TVIs were aware that young children with VI and DD lose incidental learning opportunities, and environmental arrangements may not be appropriate for this population. Instead, they introduce new concepts in a consistent, deliberate, and predictable way to close the gap between young children with VI and typically developing children.

Milieu Teaching and Discrete Trial Training, and Pivotal Response Training (Lane et al., 2016) were previously discussed in the introduction section as examples of naturalistic language interventions for young students with DD, and they might be useful for the VI population. However, none of the TVIs mentioned any intervention in the surveys or during the interviews. TVIs used a variety of strategies in influencing language skills and they value being consistent and using repetition to increase retention and clear understanding of newly learned concepts. Some of these strategies are consistent with the existing language interventions in the literature. For example, Lane and her colleagues (2016) identified naturalistic language interventions for

increasing spontaneous expressive language used primarily in young children with ASD. They found 10 naturalistic interventions within 11 articles. Nine of them used prompts to promote spontaneous verbalizations and adults in all studies provided verbal models of target sounds or vocabulary throughout the intervention sessions. A few interventions included linguistic mapping, which involves expressing the presumed meaning of the child's nonverbal behavior (i.e., mapping words to actions). The linguistic mapping has some similarities to the TVIs' concrete supports with narrating events. However, linguistic mapping is contingent upon the child's behaviors of intentional communication (Venker et al., 2012); children with VI and DD may be more hesitant to explore their environment and spontaneously communicate due to their VI and fewer opportunities for incidental learning. As a result, these interventions may need to be adapted for young children with VI and DD.

Incidental learning describes the development of a targeted skill within an unplanned interaction between a teacher and a student **(**Kamps et al., 2017; Rittenhouse-Cea & Cho, 2019). This type of teaching starts with a child showing an interest in an item, object, or activity in their environment. Once teachers realize this opportunity, they create a learning experience. Sometimes teachers structure the environment with preferable objects or materials to trigger the child's interest for social initiations (Blackwell & Stockall, 2021). However, having a VI may prevent children from visually finding interesting objects or materials around their environment. As a result, most participants of this research used concrete supports with narrating events in addition to other strategies (e.g., modeling, prompting etc.) while teaching about an object. For example, they used an adapted version of modeling called hand-under-hand. Basically, the child puts her/his hand on top of the TVI's hands and feels the object while the TVI is performing the activity. If the object is new to the child, she/he would feel more secure in this way before

touching the unknown object (Taylor & Preece, 2010). TVIs seem to adapt a few of the existing strategies in the literature for young children with VI and DD. However, they did not describe a systematic approach to objectively collect data and analyze the child's progress.

Research-based naturalistic interventions follow a systematic and objective practice to collect data and examine the success of the intervention (Dubin & Lieberman-Betz, 2020). These interventions use operant teaching techniques (e.g., positive and negative reinforcement), socially significant goals, and objective assessment of the child's progress (Baer et al., 1968). Naturalistic interventions (e.g., Milieu Teaching) have developmentally informed principles in early intervention that are designed to promote generalization and functional use of language. The participants of this research described what and how they use a strategy, but they did not discuss other phases of instruction, such as providing feedback and expansion. Instructive feedback involves consistently presenting additional related information about the target during an instruction (i.e., presenting nontarget stimuli; Leaf et al., 2017). Several studies have used instructive feedback after a correct response (Wolery et al.,1991), during the reinforcement phase (Holcombe et al., 1993), or after reinforcement (Delmolino et al., 2013). For example, if a teacher is trying to teach the concept of a chair, the teacher may also say, "this chair is made of wood." In this example, the instructive feedback includes another target word to increase the child's vocabulary. Taking everything into account, TVIs may need a more systematic approach with instructive feedback to target the language skills of young children with VI and DD. Children with VI are less likely to transfer the use of new words between contexts (Andersen et al., 1984), and systematic use of language interventions within different contexts may provide opportunities for generalization. Therefore, TVIs may need more training in promising and naturalistic language strategies that add components to their existing practices in school settings.

TVIs' Training and Self-Confidence in Language Development

Student success, teaching experience, and inadequate language training were identified as influencing these TVIs' self-confidence in targeting language development of young children with VI and DD. Six out of seven TVIs enjoyed witnessing their students' progress in language development (e.g., using new vocabulary, responding to questions). Receiving positive reactions from their colleagues or students in relation to their teaching approaches and seeing their students reach previously planned student goals made participating TVIs feel more confident and effective. The ability to serve those students in need is one of the significant factors toward a decision to pursue a profession in special education (Fish & Stephens, 2010). In fact, survey research has shown that 62% of special education teachers who intended to stay in their profession described their primary reason as enjoyment of teaching and the importance of their work (Battle & Looney, 2014), which are the factors found to be influencing TVIs' self-confidence in this study.

Another factor is years of teaching experience, which has an influence on teachers' ability to become self-confident and effective in their profession. For example, using a sample of data from 50,000 teachers, Claycomb and Hawley (2000) found that newly appointed teachers need between three to seven years before reaching full competency in their area. Novice teachers or teachers with less than three years of experience are not as effective as teachers with more years of experience (Provasnik & Dorfman, 2005). Mastery experiences (i.e., successful teaching experience) are also part of Bandura's (1994) four primary sources of self-efficacy. Like suggested by this previous research, four TVIs discussed that having more teaching experience helped them recognize their students' needs in relation to language development. For example, Diana started to see "language patterns" in teaching and that she was able to recognize a

connection between her students' developmental needs and their current level of language skills. This research supports that TVIs develop a new understanding of VI and its relation to language through their years of experience.

One of the other factors influencing these TVIs' self-confidence is lack of training in language development. Students with VI require highly specialized instruction to address their disability-specific learning needs. Certifications and training for TVIs may change depending on each state. For example, 45 states require teacher certification for TVIs, but their categories may have a different name, such as visually impaired, blind, partially and partially sighted, etc. (Ludlow et al., 2005). In a more recent study (Howley et al., 2017), researchers examined 50 U.S. states' preparation and licensure practice regarding students with low-incidence sensory disabilities (e.g., VI, ASD, deaf-blindness, etc.), and they found that 12 states offer not a single teacher preparation program. Many states lack the capacity to adequately train professionals to work with students with low-incidence sensory disabilities. It may be likely that some of these programs have accelerated options or need more university personnel to address other areas of VI education. As a result, four out of seven participants expressed their lack of training in language development in relation to young students with VI and DD. Some of the participants (e.g., Charlotte) did not recognize that they do not have adequate knowledge of language until they attended the interview. For example, there were some discrepancies between the findings of the self-efficacy scale and interview analysis. One of the four TVIs who expressed the lack of training in language had a master's in VI, but her focused area was orientation and mobility. The other three TVIs (Diana, Grace, Alice) who felt adequately trained to influence language development had a master's or Ph.D. in visual disabilities education. Diana (3.58), Alice (3.33), and Grace (4.08) received advanced training in early childhood development, but their self-

efficacy scores did not reveal any patterns in data analysis. The time of the day, their states of mind or feelings, and environments might have influenced selecting responses in the self-efficacy scale. The scale results were used for triangulating data and was adapted for this study from Bandura's self-efficacy scale. However, it may lack certain qualities to ensure high validity and reliability. The self-efficacy scale may show mixed results, but overall findings (e.g., interviews, education artifacts etc.) of this research suggest that TVIs may need some advanced training on early childhood development if they plan to work with young children with VI and DD.

Limitations of the Study

Semi-structured interviews provide a basic understanding of the participants and their involvement with the research questions (Merriam & Grenier, 2019). The self-efficacy scale provided some appreciation of TVIs' sense of their effectiveness but is subject to respondent bias. The participants were self-reporting their ability to influence language development. They had a chance to pick a desirable response rather than selecting the one that reflects their actual feelings. To avoid respondent bias, I assured the TVIs that their responses were coded under a pseudonym and completely confidential. Rating a numerical scale may be inexact and participants may feel inclined to select an extreme or middle response in many questions. Another possible limitation is related to the design of this study. The case study generally requires only a single researcher, which may lead to human error and biases in data collection or analysis (Baxter & Jack, 2008). I asked a recent colleague who has a Ph.D. in VI education to review my coding structure and data analysis. This process may have reduced the chances of bias in reporting and analysis. Due to the covid-19 pandemic, I was unable to add an observation

component to my data collection. Interview questions and artifacts provided some evidence of teachers' approach to language development.

Implications for Future Research

There is a significant gap in the literature related to the area of language development in young children with VI and DD that may need to be filled. Reviewing the literature showed that SLPs and TVIs do not have language assessment tools specifically designed for children with VI. Most assessment tools are picture-based and may not be appropriate for this population. Finding or creating a valid and reliable way to assess language skills would provide an important contribution to the VI field. The literature review also showed that there is no language intervention designed for young children with VI and DD. It will be important for future researchers to provide some suggestions from their practices or adapt existing interventions and systematically test their effectiveness on a particular case.

The results of this research suggest that TVIs who plan to work with young children with VI and DD may need more training in early childhood to grasp an adequate level of understanding related to early language development. Future researchers may further investigate TVIs' role in language development with a focus group of TVIs and SLPs who have same students on their caseload. Close examination of TVIs' language-related practices may provide more in-depth understanding of what TVIs need in the classroom. The two itinerant TVIs of this study shared their negative collaboration experiences with the SLP. Future researchers may explore communities of practice to connect TVIs with other professionals. The communities of practice can be used to support the dynamics of relationships between professionals in school settings (Handley et al., 2006).

Conclusions

The participants of this research showed that they are in a unique position to influence the language development of young children with VI and DD. TVIs appear to have the instructional knowledge and understanding of the VI needs of their students, and they recognize that SLPs have the decision-making role in language development. TVIs may need to create positive collaborative experiences with SLPs to employ their language related knowledge in school settings to maximize the benefits to students.

TVIs appear to use a variety of strategies (e.g., prompting, modeling, and concrete supports etc.) to influence language development and they value consistency with repetition in their practice. These strategies have been widely used in naturalistic interventions within the DD literature and many of them have been found to be effective for the population of students with ASD, but not specifically for children with VI and DD. TVIs may need training to implement some of these promising strategies in their classroom. Lastly, TVIs who have a graduate level of training in early childhood appear to be self-confident in language development. Therefore, TVIs who plan to work with young children with VI and DD may need to take additional early childhood classes to feel competent to work with this population, particularly in their support of children's language development.

APPENDIX A

FSU IRB APPROVAL LETTER

FLORIDA STATE UNIVERSITY
OFFICE *of the* VICE PRESIDENT *for* RESEARCH

EXEMPTION DETERMINATION

November 24, 2020

Mert Bilgin,

Dear Mert Bilgin:

On 11/24/2020, the IRB staff reviewed the following submission:

Type of Review:	Exempt (1) Educational settings; (3)(i)(B) Benign behavioral interventions (low risk)
Title:	How Teachers of Students with Visual Impairment Support the Language Learning of Young Children with Visual Impairment and Developmental Disabilities: A Multiple Case Study
Investigator:	Mert Bilgin
Submission ID:	STUDY00001839
Study ID:	STUDY00001839
Funding:	None
Grant ID:	None
IND, IDE, or HDE:	None
Documents Reviewed:	• TVI Case Study_Flyer.pdf, Category: Recruitment Materials; • TVI_CaseStudy_Consent for lead preschool teachers.pdf, Category: Consent Form; • TVI_CaseStudy_Consent for TVIs.pdf, Category: Consent Form; • TVI_CaseStudy_IRB Protocol.pdf, Category: IRB Protocol;

The IRB staff determined the protocol qualifies for exemption, effective on 11/24/2020. Your study conforms to FSU policy on COVID-19-related requirements and restrictions related to research activities that involve in-person interventions or interactions with human research participants.

Note that once the COVID-19-related requirements and restrictions are lifted and IF you plan to substitute remote interactions or interventions with in-person alternatives, or IF you plan to include as human subjects persons who were previously excluded due to their high risk for severe illness from COVID-19 or ages 65 or more years, please be sure to submit a modification to the IRB for its review of these substitutions. If however you only plan to discontinue other COVID-19-specific risk mitigation (e.g., social distancing, screening, use of PPE), then no study

modification request need to be submitted to the IRB for review before these changes may be implemented. For all other study modifications, see notes below.

You are advised that any modification(s) to the protocol for this project that may alter this exemption determination must be reviewed and approved prior to implementation of the proposed modification(s).

Modifications to the research may invalidate the exemption determination (because the research no longer meets the exemption criteria described in HRP-312 – WORKSHEET – Exemption Determination).

Examples of minor changes to exempt research that would *not* alter the exemption determination and should therefore not be submitted to the IRB for further review include the following:

- Making administrative (formatting, grammar, spelling) revisions to the protocol, consent or recruitment materials or other study documents
- Adding or revising non-sensitive questions or non-identifiable response options to a survey, interview, focus group or other data collection instrument
- Increasing or decreasing the number of study subjects—*unless* adding a new study sample such as children or prisoners or adding a new source of data or records
- Making study team/personnel changes—*except* a change in Principal Investigator (PI)

Examples of changes to exempt research that *do require* prospectively submitting a modification to the IRB before implementing changes include the following:

- Making substantive revisions or additions (e.g., change in PI; funding source; sample; source of study subjects or their data; study sites or settings; procedures, interventions or interactions with study subjects; use of any drug, device, supplement or biologic; study subjects' time or duration spent performing or participating in study activities) to the protocol, consent or recruitment materials or other study documents
- Adding or revising sensitive questions or identifiable response options to a survey, interview, focus group or other data collection instrument
- Adding a new study sample such as children or prisoners or adding a new source of data or records
- Obtaining, using, studying, analyzing, generating, storing or maintaining identifiable information or identifiable biospecimens in addition to or in lieu of de-identified or anonymous information or specimens
- Change in study risks (e.g., impact upon study subjects; impact upon students' opportunity to learn educational content or assessment of educators who provide instruction; any disclosure of study subjects' responses outside of the research may place study subjects at risk of criminal or civil liability or be damaging to subjects' financial standing, employability, educational advancement or reputation)
- Change in Principal Investigator (PI) or (for students) faculty advisor
- New or change in financial interest

In conducting this protocol, you are required to follow the applicable requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the Library within the RAMP IRB system.

Sincerely,

Office for Human Subjects Protection (OHSP)
Florida State University Office of Research
2010 Levy Avenue, Building B Suite 276
Tallahassee, FL 32306-2742
Phone: 850-644-7900
OHSP Group Email: humansubjects@fsu.edu
OHSP Web: https://www.research.fsu.edu/hs

APPENDIX B

TEACHER RECRUITMENT FLYER

HELP FELLOW TVIs!

PARTICIPATE IN OUR STUDY!

Are you currently teaching a student between the age of 36 and 72 months who is receiving services for VI and developmental disabilities? I am a doctoral candidate in Visual Disabilities Program at Florida State University. I am interviewing TVIs about their roles and experiences in supporting language development of young children with VI and developmental disabilities.

I would like to conduct two interviews with you. Each interview may take about one hour and can be scheduled at your convenience. Participants will be compensated with a $25 amazon gift card for each interview.

For more information or to participate, please send me an email:

Best!
Mert Bilgin

APPENDIX C

TEACHER CONSENT FORM

Permission to Take Part in a Human Research Study

Title of the Study: A multiple case study on teachers of children with visual impairment (TVI) beliefs and decision-making process for improving language skills of young children with visual impairment (VI) and developmental disabilities (DD)

Principal Investigator: Mert Bilgin, Doctoral Candidate in Special Education at FSU

Faculty Advisor: Dr. Kelly Whalon, Associate Professor in Special Education at FSU.

You are being invited to take part in a research study. Please find below information about this research for you to think about before you decide to take part. Ask us if you have any questions about this information or the research before you decide to take part.

Key Information for You to Consider
Statement of the Research Study. You are being invited to volunteer to take part in our research study. It is up to you whether you choose to take part or not. There will be no penalty or loss of benefits to you if you choose not to take part or decide later not to take part. **Purpose**. The reason that we are doing this research is to explore how teachers of students with visual impairment (TVI) support language development of young children with visual impairment (VI) and developmental disabilities (DD) **Duration.** We think that taking part in our study will last total two hours with two separate one-hour interviews. **Research Activities.** You will be asked to complete a short survey about teaching young children with VI and DD and attend two interviews. You will be asked to share photos of educational artifacts in some ways related to language skills (e.g., anecdotal notes, progress monitoring data, instructional materials) with the researcher without any student information on them. **Risks:** The risks or discomforts to you of taking part in this study include feeling tired by talking. **Benefits:** As a result of taking part in this research, we think that you may help researchers to understand current language practices used by TVIs so that TVI training programs can be improved.

What is this study about?
Researchers at Florida State University are studying how teachers of students with visual impairment (TVI) support the language development of young children with VI and developmental disabilities (DD). Researchers are interested in finding out TVIs' current language practices, their ability to influence language development. You are invited to take part in the study because 1) hold at least a bachelor's degree, and (2) currently have a preschool student with VI and DD on your caseload.

What will happen during this research?
If you agree to be in this research, your participation will include attending two separate (one-hour) interviews and completing two surveys. Before the interviews you will be asked to fill a demographic survey and a self-efficacy scale about improving language skills of you children with VI and DD. These surveys may take 5-10 minutes to complete.

The first interview will try to reveal your belief and decision-making process for improving the language skills of young children with VI and DD. It will begin by asking a few background questions, followed by some general training questions and your current educational practices.

The second interview will be about your student and previous collaboration experiences with families, colleagues for improving language skills, concerns and goals related to language skills, creating educational artifacts. Both interview wills be audio recorded via zoom conferencing application. We will tell you about any new information that may affect your willingness to continue to take part in this research.

What will you do to protect my privacy?
The results of the study may be published or presented, but no information that may identify you will ever be provided or released in publications or presentations. We will take steps to protect your privacy and confidentiality. These steps include de-identifying your records and keeping everything in a password protected computer. Despite taking steps to protect your privacy or the confidentiality of your identifiable information, we cannot guarantee that your privacy or confidentiality will be protected. For example, if you tell us something that makes us believe that you or others have been or may be physically harmed, we may need to report that information to the appropriate agencies.

Individuals and organizations responsible for conducting or monitoring this research may be permitted access to and inspect the research records. This includes the Florida State University Institutional Review Board (FSU IRB), which reviewed this study.

All collected data will be kept under randomly given codes. Only the principal investigator will have access to the participants'' identifiable information linking to the codes. All information obtained from this research will be kept in an encrypted folder separate from the recordings. All collected data will be removed after December 2022.

The information collected as part of this research will not be used or distributed for future research studies, even if all of your identifiers are removed.

What are the risks of harms or discomforts associated with this research?
The risks of harms or discomforts associated with the research are maybe psychological such as emotional stress and anxiety. Harms and discomforts may result from unauthorized or unintentional disclosure of identifiable information. The probability and the severity of a harm or discomfort materializing from participating in this research is estimated to be very small.

How might I benefit from this research?
There may be no personal benefit from your participation, but the knowledge received may be of value to TVI training programs and prospective TVIs.

What is the compensation for the research?
You will receive $25 for participating in each interview. Total $50 at the end of the study.

Permission to Take Part in a Human Research Study

What will happen if I choose not to participate?
It is your choice to participate or not to participate in this research. Participation is voluntary.

Is my participation voluntary, and can I withdraw?
Taking part in this research study is your decision. Your participation in this study is voluntary. You do not have to take part in this study, but if you do, you can stop at any time. Your decision whether to participate will not affect your relationship with researchers or FSU. There are no consequences to which you are otherwise entitled, if you do not participate.

You have the right to choose not to participate in any study activity or completely withdraw from continued participation at any point in this study without consequences to which you are otherwise entitled.

If you withdraw from the study, the data collected to the point of withdrawal will be deleted.

Can I be removed from the research without my OK?
We may remove you from the research study without your approval. Reasons we would do this include not following study instructions such as not attending interviews or completing surveys.

Who do I talk to if I have questions?
If you have questions, concerns, or have experienced a research-related injury, contact the research team at:

The Florida State University Institutional Review Board ("IRB") is overseeing this research. The FSU IRB is a group of people who perform official independent review of research studies before studies begin to ensure that the rights and welfare of participants are protected. If you have questions about your rights or wish to speak with someone other than the research team, you may contact:

Florida State University IRB
2010 Levy Drive, Suite 276
Tallahassee, Florida 32306
850-644-7900
humansubjects@fsu.edu

STATEMENT OF CONSENT
I have read and considered the information presented in this form. I confirm that I understand the purpose of the research and the study procedures. I understand that I may ask questions at any time and can withdraw my participation without prejudice. I have read this consent form. My signature below indicates my willingness to participate in this study.

Permission to Take Part in a Human Research Study

I consent to participate in this study.

Printed Name of Adult Participant

Signature of Adult Participant Date

I agree to be audiotaped
YES (initial) ____ NO (initial) ____

Researcher's Signature

I have fully explained the research study described by this form. I have answered the participant and/or parent/guardians' questions and will answer any future questions to the best of my ability. I will tell the family and/or the person taking part in this research of any changes in the procedures or in the possible harms/possible benefits of the study that may affect their health or their willingness to stay in the study.

Printed Name of Research Team Member Obtaining Consent

Signature of Research Team Member Date

APPENDIX D

FIRST INTERVIEW PROTOCOL

Time of Interview:

Date of Interview:

Place of Interview:

Interviewer:

Interviewee:

Interview Process:

1. Introduce the interview process.
2. Explain the study and plan for results.
3. Explain the type of interview and its nature
4. Indicate how long the interview may take.
5. Inquire if the interviewee has any questions before the interview begins.
6. Begin the interview process
7. Ask questions.
8. Probe (e.g., Who? What? When? Where? Why? How? Elaborate? Tell me more?)
9. Support participants and appreciate their responses (e.g., Thank you for the insightful comments. You're helping me learn about your perspectives.)
10. End interview process.

Opening Remarks:

Hello, my name is Mert Bilgin, and I am a Ph.D. student at Florida State University. Thank you for taking the time to meet with me today. How are you? I look forward to hearing about your experiences and learn from you today. I invited you to take part in this interview to

understand TVIs beliefs and decision-making process for improving the language skills of young children with VI and DD. I will be asking a series of questions. I will begin by asking a few background questions, followed by some general training and questions related to young children with VI and DD. The interview will be audio-recorded, and all your responses will remain confidential. Please remember to use an alternative name for any of your colleagues or students during the interview, which may take between 60 minutes. Do you have any questions before we begin?

Interview Questions

1. Tell me about your current teaching/consulting role.
2. What kind of training have you received on the language development of young children?
    a. What other training have you had to improve listening speaking skills?
    b. Tell me about the courses that you took addressed language development. How much do you think those courses prepared you?
3. Tell me about the IEP team. Who on the team is responsible for improving language skills of young children with VI and DD? How do different members of the IEP team address the language development of young children with VI and DD?
4. How do you perceive your role in the language development of young children with VI and DD?
5. As a TVI, what are your biggest challenges in influencing language skills of young children with VI and DD?
6. What do you think are the biggest needs of young children with VI and DD related to language development?

    a. How collaboration with other professionals influences your ability to fill these needs

7. What do you consider the most important instructional targets (e.g., objectives, goals etc.) for young children with VI and DD related to language development?
    a. How do you decide which ones are most important? Why?
    b. How do you prioritize the instructional targets?
    c. Who has the most influencing decision-making role in this process?
8. What kind of language strategies do you use with young children with VI and DD? What that looks like?
    a. How do you influence the lead preschool teacher to use your language strategies?
    b. How do you know these language strategies are working?
9. How confident do you feel in your ability to influence language development? What makes you feel that way?
10. What influences your confidence in teaching/influencing language skills to children with VI and DD?
    a. How does collaboration with other professionals influence your confidence in teaching/influencing language skills to children with VI and DD?
11. What do you think would help TVIs to better support the language needs of young children with VI and DD?

APPENDIX E

SECOND INTERVIEW PROTOCOL

Time of Interview:

Date of Interview:

Place of Interview:

Interviewer:

Interviewee:

Interview Process:

1. Introduce the interview process.
2. Explain the study and plan for results.
3. Explain the type of interview and its nature
4. Indicate how long the interview may take.
5. Inquire if the interviewee has any questions before the interview begins.
6. Begin the interview process
7. Ask questions.
8. Probe (e.g., Who? What? When? Where? Why? How? Elaborate? Tell me more?)
9. Support participants and appreciate their responses (e.g., Thank you for the insightful comments. You're helping me learn about your perspectives.)
10. End interview process.

Opening Remarks:

Hi again, thank you for taking the time to meet with me today. How are you? I look forward to hearing about your experiences and learn from you today. I will be asking a series of

questions. The interview will be audio-recorded, and all your responses will remain confidential. Please remember to use an alternative name for any of your colleagues or students during the interview, which may take approximately 60 minutes. Do you have any questions before we begin?

Interview Questions

1. Please describe your student with VI and DD.
2. Tell me about his/her language skills
3. What are your goals for your student?
    a. What were your concerns and goals related to language skills?
4. How do/did you know what to address?
5. How are you currently addressing those goals? How is that working?
    a. Do you have any educational artifacts to describe in this session?
6. How often do you get together with other professionals to discuss the child's educational needs (e.g., speaking, listening, vocabulary skills)?
7. What kind of supports do you think you wish you had?
8. What do you think about collaboration with other professionals and family regarding language skills?
9. Can you tell me about your best and worst collaborative experiences with family and other professionals?
10. Is there anything else that would be important to point about this student, your role and collaboration?

APPENDIX F

TEACHER DEMOGRAPHICS SURVEY

The following questions designed to be answered by TVIs who have a young student with VI and DD in their caseload/classrooms. The survey administered via Qualtrics online survey software.

Please fill in your answers to the following open-ended questions.

1. What is your name?
2. What is your age?
3. What is your gender?
4. What is your ethnicity?
5. What is your highest level of education?
6. How many years of experience do you have working as a teacher?
7. How many years of experience do you have working with young children with visual impairment and developmental disabilities?
8. How many students do you have on your caseload? Or How many students do you teach this semester?
9. What grade levels do you currently teach?

APPENDIX G

ADAPTED SELF-EFFICACY SURVEY

The following questions designed to be answered by a TVI who has a young child with VI and DD on their caseload. The survey administered via Qualtrics.

Directions: Please mark one of the five responses ranging from (1) none at all, (2) very little, (3) some degree, (4) quite a bit, (5) a great deal. Please respond to each of the questions by considering the combination of your current ability, resources, and opportunity to do each of the following in your present position. The term "students" refers to preschool children with VI and DD.

1. How well can you inform the lead preschool teacher about the impacts of VI on language development?
2. How well can you assist the lead preschool teacher to assess the language skills of children with VI and DD?
3. To what extent can you recommend strategies to promote language development of children with VI and DD to the lead preschool teacher?
4. To what extent can you employ specific strategies to encourage use of expressive language skills for children with VI and DD?
5. How much can you influence language development of children with VI and DD during the time you work with them?
6. To what extent can you influence the lead preschool teacher's use of language practices appropriate for children with VI and DD?
7. To what extent can you employ specific strategies to encourage use of receptive language skills for children with VI and DD?

8. How much can you do to adjust your lessons to the language level of children with VI and DD?
9. To what extent can you advocate to support the language learning skills of children with VI and DD in an individualized education program meeting?
10. How well can you target the vocabulary development of children with VI and DD?
11. How much can you assist parents in helping to address the language development of children with VI and DD?
12. How well can you create opportunities for children with VI and DD to use language?

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BIOGRAPHICAL SKETCH

Mert Bilgin was born and raised in Turkey and earned his undergraduate degree in Elementary Education from Recep Tayyip Erdogan University (Rize, Turkey) in 2013. He was accepted to the Erasmus Exchange Program and studied at Jagiellonian University (Krakow, Poland) between 2011 and 2012. He was accepted to the Farabi Exchange program and studied at Gazi University (Ankara, Turkey) between 2012 and 2013. He attended a professional development program to receive a special education certificate. While working as a special education teacher, he was awarded a sponsorship by the Turkish Ministry of Education to pursue his graduate studies in the United Kingdom and the United States. Mert Bilgin earned his master's degree in Inclusive and Special Education from the University of Edinburgh, Scotland, and a doctoral degree in Curriculum & Instruction (Special Education) at Florida State University. During his graduate studies at FSU, Mert Bilgin worked as a research and teaching assistant and conducted research studies with his colleagues and instructors.