

A national survey: Teacher identification of specific language
impairment

By
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Abstract

This survey investigated the identification of specific language impairment by public school teachers nationwide. It examined to what extent teachers are able to identify and provide treatment for children with specific language impairment. Previous research suggests that special education teachers may differ from general education teachers in their ability to identify and provide treatment for student needs. Participants were public school teachers, both general education and special education, who taught from pre-K through age 21 nationwide. Their demographics were consistent with public school teachers nationwide. Participants completed an anonymous survey with questions on demographics, educational role, and educational practice. Crucially, participants responded to six case studies of students, each with a unique profile of specific language impairment. Data analysis included descriptive statistics and chi-square tests. Results showed that while teachers were attuned to the students' differences in the case studies, they struggled to identify the children's language needs. There were no differences between general education and special education teachers. Implications of these findings and future directions for research are offered.

Keywords: specific language impairment, language impairment, teacher identification

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Chapter 1 :Rationale

Introduction

Specific language impairment, or SLI, is a language disorder where the mastery of language skills in children is delayed, in the absence of hearing loss or other developmental delays (National Institute on Deafness and Other Communication Disorders [NIDCD], 2015; Rice, 2015; Rice, Tomblin, Hoffman, Richman, & Marquis, 2004). However, the diagnosis is controversial. Points of contention surrounding SLI include the terminology, exclusionary criteria, or the discrepancy needed to establish that language difficulties are below the typical range, and how SLI manifests itself in the language system (Bishop, 2014; Ebbels, 2014). This disagreement contributed toward excluding SLI from the DSM-5 (American Speech-Language-Hearing Association, 2012). Regardless, in a longitudinal study, Rice has found evidence supporting SLI as an impairment that impacts the grammar system and vocabulary acquisition in Standard American English (Rice, Redmond, & Hoffman, 2006; Rice, Smolik, Perpich, Thompson, Rytting, & Blossom, 2010). Under this account, individuals with SLI have typical nonverbal intelligence (NVIQ) but face difficulty in finiteness, or tense, marking and other areas where the syntax requires movement (Rice, Wexler, & Hershberger, 1998). To this end, tense-marking has been found to be a clinical marker of SLI (Rice, Tomblin, Hoffman, Richman, & Marquis, 2004; Rice & Wexler, 1996). Here, SLI is defined as an impairment to the language system, with tense-marking as a clinical marker, that occurs in the absence of other hearing loss or other developmental delays.

What this means is that children with SLI have a protracted period in which tense marking remains optional, known as the extended optional infinitive (EOI) stage (Rice, Wexler, & Cleave, 1995). Once the initial delayed onset is overcome, their language development

trajectories grow at the same rate as typically developing peers, but have a protracted growth period (Rice et al., 2006). Consequently, their language abilities are perpetually below those of their peers, with adverse implications for education and social life (Rice, Sell, & Hadley, 1991). Many remain undiagnosed, such that their disability is invisible, and never receive services (Redmond, 2016; Redmond, Ash, & Hogan, 2015; Tomblin, 1997). The long-term consequences of remaining undiagnosed and without services are significant. Individuals with SLI face adverse outcomes in the way of education, and particularly postsecondary education, as well as mental health (Law, Rush, Schoon, & Parsons, 2009). These educational difficulties relative to peers without language impairment persist, even after controlling for nonverbal IQ (Young et al., 2002). Additionally, they face difficulties in navigating through work environments (Law et al., 2009), and have a higher risk of emotional health symptoms for anxiety and depression (Conti-Ramsden & Botting, 2008). Beyond individual impact, the cost of SLI is high. In Australia, a questionnaire found that children with language difficulties had higher healthcare costs than children without language difficulties, including the portion of healthcare costs paid for by the family, across three different age brackets (Cronin, Reeve, McCabe, Viney, & Goodall, 2016). Nearly 100% of the healthcare cost differences were attributable to medical care. Although this may be due to the format of the questionnaire, such that children identified as language impaired were likely to have other impairments, rather than SLI, the implications are grave. Altogether, SLI is an impairment that adversely impacts the quality of life, from education to employment and social life, across the life span.

On the practitioner side, it is unclear how SLI functions in school settings. Specifically, not much is known about teacher knowledge and identification of SLI, as well as the provision of services for students with SLI. This perspective comes from literature on teacher preparation,

teacher identification of students with SLI, the use of language in the classroom, the attitude of teachers toward children with limited linguistic competency, teacher judgment of children with SLI, the provision of treatment for students with limited linguistic competency, and teacher knowledge of reading abilities and reading instruction.

Literature Review

Teacher preparation. The literature suggests that general education teachers are unprepared to teach students who require additional services beyond good classroom instruction (Brownell, Ross, Colón, & McCallum, 2005; Brownell, Sindelar, Kiely, & Danielson, 2010). Moreover, the literature suggests that teachers are unprepared to teach various aspects of language, and to provide services for students with reading and spelling disabilities (L. Moats, 2009). These outcomes may be a consequence of the structure of teacher training programs and teacher knowledge of language and literacy instruction.

At a structural level, teacher training programs show apparent deficits in preparing teachers for language and literacy instruction. This does not appear to be a recent issue. In a review of 48 state departments of education, Nolen, McCutchen, and Berninger (1990) found that teacher education programs were generally poor at training teachers in reading development and disciplinary knowledge. Additionally, they found that there were minimal requirements for certification in reading and writing at the elementary, secondary, and adult education levels. These results are consistent with Walsh, Glaser, and Wilcox (2006), who found that teacher certification coursework for preservice elementary teachers was insufficient in both content and design, such that students were not being prepared to implement effective reading instruction. Across teacher preparation training programs, few texts were read; of these texts, the literature on reading science was misrepresented (Walsh et al., 2006). Moreover, the most popular texts

used in reading courses did not address the five essential components of reading identified by the National Reading Panel (Walsh et al., 2006). Distance learning as an alternative method to traditional coursework does not appear to fare any better. A review of special education distance learning programs and course delivery found that most distance learning courses were introductory or survey courses, with no difference in student performance between traditional and online formats (Vernon-Dotson, Floyd, Dukes, & Darling, 2013). Outside the U.S., teachers in mainstream and regional specialist schools may also lack the training to assist students with specific speech and language difficulties (SSLD). Of 69 teachers, only five reported any specific training on SSLD (Dockrell & Lindsay, 2001).

Unsurprisingly, teacher knowledge on language instruction also appears to be lacking. Over twenty years ago, teachers demonstrated difficulty with knowledge of phonics, without a correlation between teacher knowledge and teacher expertise (i.e., years of teaching and type of teaching license) (L. C. Moats, 1994). Additionally, while teachers felt prepared to meet student needs due to receiving high grades in their preservice coursework, the training programs did not provide them with effective, explicit or contextualized instruction in coursework or in practicum (Lyon, Vaasen, & Toomey, 1989). These preservice teachers were inadequately supervised, and did not receive feedback on their ability to differentiate instruction.

This trend of inadequate teacher knowledge has continued, particularly with regard to a mismatch between what educators believe they know and what they actually know. Repeated studies have demonstrated that while educators may feel positive about their ability to teach reading and language arts, they have limited knowledge of phonological awareness, linguistic concepts, and literacy and reading instruction (Bos, Mather, Dickson, Podhajski, & Chard, 2001; Cunningham, Perry, Stanovich, & Stanovich, 2004; Cunningham, Zibulsky, & Callahan, 2009;

Spear-Swerling, 2009; Spear-Swerling & Brucker, 2006). This knowledge deficit even extends to university instructors of reading coursework who have been elementary teachers (Joshi et al., 2009), and to special education teachers, who may not be better prepared to teach reading instruction than general education or reading teachers (Spencer, Schuele, Guillot, & Lee, 2008). Under certain contexts, teachers may be able to self-assess their ability to teach children who struggle with language and reading (Bos et al., 2001; Spear-Swerling, Brucker, & Alfano, 2005); in others, teachers overestimate or underestimate their actual knowledge (Cunningham et al., 2004; Cunningham et al., 2009). Interestingly, one study found that preservice elementary teachers had robust knowledge about phonological awareness, phonics, comprehension, and vocabulary, with those in a program requiring more reading methods courses outperforming those in a program requiring less (Clark, Helfrich, & Hatch, 2015). However, the mean composite accuracy on the measure was only 68%, with item means of 62% for phonological awareness, 70% for phonics, 44% for fluency, 63% for comprehension, and 53% for vocabulary. In sum, teachers appear to be unprepared in literacy and reading instruction, as well as linguistic construct knowledge.

It remains unclear whether special education teachers are prepared to address the needs of students who do not respond to general classroom instruction, and specifically, the needs of students with SLI. The 2004 reauthorization of the Individuals with Disabilities Education Act (IDEA) and the No Child Left Behind (NCLB) Act, now the Every Student Succeeds Act (ESSA), have highlighted the need for high quality special education teachers (Brownell et al., 2010). Yet, instead of focusing on the requisite content knowledge for language and reading instruction (Vernon-Dotson et al., 2013), special education programs have focused on the teacher shortage in special education and traditional views of special education practice (i.e., knowledge

of interventions, assessment, and collaboration) (Brownell et al., 2010). Special education teachers may be better prepared to address the needs of students with SLI, because they are trained in effective intervention delivery. Conversely, special education teachers may not be better prepared to teach students with language needs, because they lack the content knowledge for language and reading instruction.

Teacher identification. The literature has also identified that teachers struggle to identify children with SLI, or more broadly, children with language needs. This difficulty has been self-identified in at least one study from the United Kingdom, where 40% of teachers for 69 students in regional specialist and mainstream schools were unable to provide information on speech or language in interviews on specific speech and language difficulty (Dockrell & Lindsay, 2001). Furthermore, no teachers referred to the discrepancy between language ability and nonverbal intelligence. Overall, they were able to recognize student difficulties, but struggled to meet their needs, including identification of SSLD, due to their own knowledge gap.

Teacher difficulty in identifying children with SLI has been found elsewhere, particularly in studies coming out of Australia. In a study of 15 teachers and their students, teacher ratings on the Children's Communication Checklist—2nd edition (CCC-2), relative to the CELF—4th edition (CELF-4) showed poor sensitivity and specificity in identifying children whose oral language skills required further evaluation (Antoniazzi, Snow, & Dickson-Swift, 2010). Similarly, the Kindergarten Development Check (KDC), a screening tool, was found to be ineffective in helping kindergarten teachers to identify students with speech and language impairments (Jessup, Ward, Cahill, & Keating, 2008). Of the 286 students who were administered the KDC twice by teachers, 77 students were diagnosed with language impairment the following year by a speech-language pathologist. Yet, only 14 of those 77 had failed the

second screening. Finally, Williams (2006) found that teachers struggled to identify kindergartners as at-risk, who also had below average standardized test scores, and to identify kindergartners as average, who also had average scores. The take-home point is that even with diagnostic tools, teachers appear to struggle with identifying SLI. It is unknown how teachers identify SLI in the United States, whether they struggle in doing so, and what role they play in identification and the provision of services.

Use of language in the classroom. Pre-school and kindergarten teachers differ in their attitudes toward the use of language in the classroom, and specifically, the spoken language by students in the classroom. Hains, Fowler, Schwartz, Kottwitz, and Rosenkoetter (1989) found that while preschool teachers emphasized communication and social interactive skills, kindergarten teachers emphasized following instructions and classroom behavior. These results are consistent with the findings of Hadley, Wilcox, and Rice (1994). In a survey of 145 teachers, preschool teachers encouraged talking more than kindergarten teachers during teacher-directed activities. Kindergarten teachers tolerated, but did not encourage, talking during teacher-directed activities. Across groups, teachers encouraging children to talk during teacher-directed activities were more tolerant of verbal infractions. One possibility is that progressing across the grades, teachers expect less spoken speech by students during teacher-directed activities. What is missing is how teachers of students beyond kindergarten interpret the use of language by students in the classroom, with respect to grammar and deficits in the grammar versus vocabulary. Additionally, it is also unknown how teachers interpret children's interactions with other children, such as initiations, turns, and exchanges.

Teacher attitudes toward children with limited linguistic competency. The literature supports the existence of systematic biases toward children with limited linguistic competency

by teachers. In a rating of a mere 90-second sample, systematic biases were found toward children with speech and language impairments (Rice, Hadley, & Alexander, 1993). Participants rated the speaker on how well the message was conveyed, intelligence, leadership, likability, parent education, parent social status, social maturity, and academic success. Across the board, the ratings for children with speech and language impairments were consistently lower than the ratings for both typically developing children and children with speech impairment. These respective ranking of ratings held across 4 participant groups: teachers, non-educators, undergraduates, and speech-language pathologists. In this way, the children with limited linguistic competency received the most bias. These results are consistent with the findings of DeThorne and Watkins (2001), who modified the questionnaire used in Rice, Hadley, & Alexander (1993), to investigate listener perception of children's communication skills. Sixth-grade students replaced the non-educator group, and a 2.5-minute sample replaced the 90-second sample. All listener groups consistently perceived the child with SLI more negatively than the two typically developing peers, suggesting pervasive listener bias toward children with language impairments.

Bias toward children with limited linguistic competency has also surfaced in the case of children who use alternative and augmentative communication (AAC) devices. Dada and Alant (2006) found that while teachers from specialist schools and inclusive schools were generally positive about AAC devices, they were less positive about their abilities to work with students who use AAC devices. Furthermore, in a survey of 187 special education teachers working with students who had severe communication impairments and who used AAC devices, the greatest positive influence on teachers' intentions to use AAC in the classroom was their perception of student ability to learn to communicate more effectively (Soto, 1997).

Overall, adult biases toward children with limited linguistic competency are reflective of their expectations for children's language. It appears that communicative ability is the basis for judging a myriad of other factors. What remains unresolved is if teachers can identify language impairment or child grammar, and what attitudes teachers have toward children with SLI.

Teacher judgments of children with SLI. In addition to showing bias toward children with limited linguistic competency, teachers may also show systematic bias toward children with SLI. This is based on findings that teachers are able to discern differences in the speech and behavior of children with SLI. In Rice et al. (1993), adults were able to detect which children had speech commensurate with typical development and which children had SLI from a 90-second spontaneous language sample. Narrative language samples have also demonstrated the ability of laypeople and teachers to discern differences in the speech of children who are typically developing and children with SLI (Newman & McGregor, 2006).

Beyond language, teachers are able to discern behavioral differences in children with SLI. While these differences may take the appearance of a pragmatic or social communication disorder, these differences may be a function of having limited linguistic competency (Rice et al., 1993). In Wittke, Spaulding, and Schechtman (2013), parents and teachers rated children with SLI as having worse executive functioning than their typically developing peers. Adult perceptions of children's executive functioning significantly correlated with their language abilities. Similarly, teachers have rated children with language impairment as being significantly more likely to also have an emotional/behavioral disorder over time (Botting & Conti-Ramsden, 2000). Thus, differences in children with SLI are readily apparent to teachers in both behavior

and speech. It is unknown whether teachers are able to appreciate SLI as an underlying disorder that causes other issues in the school setting.

Provision of treatment for students with limited linguistic competency. Teachers play a primary role in the education of students and may be the first in the line of defense for evaluating whether a student needs additional help beyond basic classroom instruction. In this sense, teachers may be the professionals in the school setting who are responsible for providing intervention first to children with SLI and for identifying students in need of additional (outside) help. However, teachers may struggle to identify and provide services for students with SLI. In a study of 24 4- and 5-year olds with severe SLI, Gallagher and Chiat (2009) found that children receiving intensive treatment from community-based speech-language pathologists had greater improvement on comprehension and expressive language measures than controls and children in treatment with a nursery teacher. In fact, children in treatment with a nursery teacher did not generally differ from controls. This is unsurprising, as teachers struggle to meet children's language needs (Dockrell & Lindsay, 2001).

Reading abilities and reading instruction. One natural conclusion from the literature on teacher preparation and reading instruction is that practicing teachers will not know about reading abilities and reading instruction. Studies have found that teachers lack the knowledge to support early literacy, including children's literature, phonological awareness, phonics, and early reading acquisition (Cunningham et al., 2004; Cunningham et al., 2009; L. C. Moats, 1994; Spencer et al., 2008). It remains a question what teachers know about reading abilities and instruction, particularly in the case of SLI. It is also a question as to whether special education teachers will differ in their knowledge from general education teachers.

In sum, there are many gaps in the literature surrounding teachers and SLI. It is unclear whether special education teachers are better prepared than general education teachers to address students' language needs, and to what extent teachers are able to identify students with SLI. Additionally, it is unknown whether teachers are able to recognize the import of grammar and deficits in the grammar versus vocabulary. Yet another question is what attitudes, and potential biases, teachers demonstrate toward children with SLI. Last, it is unclear what constitutes intervention for children with SLI and method of delivery, as well as teacher knowledge of reading abilities and reading instruction.

The current study

Given what is known regarding teacher knowledge of language and of SLI, as well as the gaps in the literature, this study was developed with the following predictions. First, special education teachers may differ from general education teachers in their educational practices, as well as their knowledge of grammar and language. Second, teachers will play a role in identifying children with SLI, but will struggle to do so. Specifically, they will be able to discern differences in the speech and behavior of children with SLI, but will fail to appreciate the import of grammar. Third, teachers will also play a role in providing intervention to children with SLI, with in-class intervention as a popular method of delivery. Fourth, teachers will face deficits in their knowledge of language and language instruction.

Chapter 2 : Research aims

Survey design

A survey was formulated to address the questions of to what extent teachers work with students with disabilities, and to what extent teachers are able to identify and provide treatment for students with SLI. The survey questionnaire was developed on a Qualtrics platform. The

survey was designed to parallel a separate survey of speech/language pathologists, for ultimate comparisons across the two disciplines. The major blocks of content are: work setting, services available to children, professional practices, and child case studies. The survey was pilot tested three times. Feedback from respondents was used to adjust question content, survey length, and formatting. Pilot respondents were solicited from one of the author's network of teacher colleagues. One significant piece of feedback was concern about survey length; in response, the number of questions was reduced in favor of survey completion. Additional feedback was solicited from Shannon Wang, the research director of clinical language assessments at Pearson, on the subject matter of survey formatting and length. There were 82 questions total, although participants may have answered fewer questions within the structure of the questionnaire. Participants completed the survey through an anonymous link that they could repeatedly access to complete the survey within thirty days. A significance level of $p < .01$ was used for all analyses. A copy of the survey is available upon request to the author.

Chapter 3 Methods

Participants

There were 304 respondents to the survey questionnaire. Participants came from cooperating branches of teacher organizations, the Council for Exceptional Children online forum, and a third-party commercial entity providing e-mail distribution lists. 12 of 78 (15.4%) state branches of the American Federation of Teachers and of the National Education Association agreed to participate (see Figure 1). Note that although there are 11 states represented on the map, one state had both the National Education Association and the American Federation of Teachers agree to participate, bringing the total count to 12. To respect privacy, there were no questions about the residency of the respondents. The assumption is diverse

representation from the National Council for Education Statistics (NCES) site source, as well as broad state representation from the state organizations.

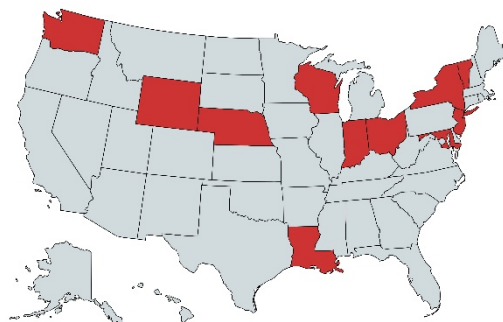


Figure 1. Participating state branches of the American Federation of Teachers and of the National Education Association. Participating state branches are indicated in red.

Participants self-reported demographic information for ethnicity, race, and sex (see Table 1). The majority of respondents is non-Hispanic, white, and female. 91.78% of respondents are non-Hispanic. Within this group, white non-Hispanic females comprise the majority at 69.08% of total respondents, and white non-Hispanic males account for 8.22% of respondents. Non-Hispanic black or African American respondents comprise the next largest group, with females accounting for 5.26% of the total respondent base and males for 0.66%. Fewer respondents were non-Hispanic and American Indian, Asian or Pacific Islander, multiracial, or of unknown/not specified race. Most of the Hispanic respondents were white females, comprising 4.93% of the total respondent base. Very few respondents identified as Hispanic or Latino and other racial groups, or of unknown ethnicity. Overall, 82.89% of respondents are white, and 88.16% are female. These demographics are consistent with national teacher demographics, as reported by the National Center for Education Statistics.

Racial Categories	Ethnic Categories									
	Not Hispanic or Latino			Hispanic or Latino			Unknown/Not reported Ethnicity			Total
	Female	Male	Unknown/Not reported	Female	Male	Unknown/Not reported	Female	Male	Unknown/Not Reported	
American Indian	1.32%	0.00%	0.00%	0.33%	0.00%	0.00%	0.00%	0.00%	0.00%	1.64%
Asian/Pacific Islander	1.64%	0.33%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	1.97%
Black or African American	5.26%	0.66%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	5.92%
White	69.08%	8.22%	0.00%	4.93%	0.33%	0.00%	0.33%	0.00%	0.00%	82.89%
More than One Race	2.30%	0.33%	0.00%	0.00%	0.33%	0.00%	0.00%	0.00%	0.00%	2.96%
Don't know/Not specified	1.64%	0.99%	0.00%	1.32%	0.33%	0.00%	0.00%	0.33%	0.00%	4.61%
Total	81.25%	10.53%	0.00%	6.58%	0.99%	0.00%	0.33%	0.33%	0.00%	100.00%

Attrition

The survey had an overall attrition rate of 44% (see Figure 2). 304 respondents consented to participate in the survey. 230 of the 304 respondents who began the survey completed the first half of the survey, in which they provided information on demographics, work setting, services available to children, and professional practices. By the time respondents reached the introduction to the case studies, 27% had dropped from the survey. This loss increased to 32% for Case A. Attrition rates increased across case studies, accumulating to 43% for Case F. An additional 1% was lost in the final section of the survey, where respondents indicated level of preparedness for and training on issues in the survey.

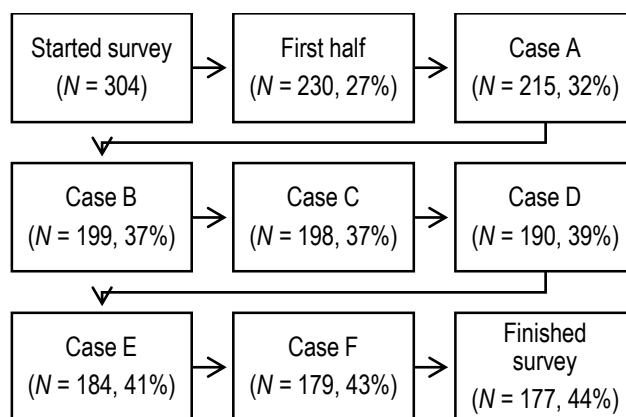


Figure 2. Cumulative percentage of attrition across survey sections. This figure illustrates the cumulative percentage of respondents who dropped out of the survey across survey sections.

After accounting for attrition, there were 177 total respondents who completed the entire questionnaire. Inspection of completion revealed a pattern of attrition across specific survey sections: demographics and work settings, and case studies. Providing information on work setting, services available to children, professional practices, and responding to case studies, seemed to be tied to increases in attrition. Respondents who finished the survey and those who dropped after the first half of the survey did not generally differ. The few areas where respondent groups differed were: teaching certification, hours worked per week, educational role, and the number students taught per day who have an IEP (see Table 2). Respondents who finished the survey were more likely to hold teaching certification ($\chi^2(1)=18.17, p < 0.001$) and to teach full time ($\chi^2(3)=28.24, p < 0.001$). They were also more likely to work in a setting where an option other than those provided determined student eligibility for special education services ($\chi^2(1)=9.10, p < 0.01$). Conversely, respondents who dropped out of the survey were more likely to indicate they taught a class other than a language intensive class, a non-language intensive class, special education, or an off-site job or vocational training program ($\chi^2(1)=8.25, p < 0.001$).

Table 2		
<i>Differences between respondents who completed the survey and who dropped out of the survey</i>		
	Finished survey	Did not finish survey
Teaching certification	98.9%	88.7%
Worked 35 hours or more per week	92.7%	71.3%
Students per day with an IEP		
None	4%	6.2%
1 – 10	52%	37%
11 – 20	23.2%	32.1%
21 – 30	14.1%	8.6%
31 or more	6.8%	16%
Class/classes taught		
Other	20.3%	35.8%
Eligibility for services		
Other	12.9%	1.2%

Work setting

Career experience. Respondents reported information on their career experience. 33.9% had twenty years or more of cumulative years teaching, 21.6% had 11 to 15 years, 16.4% 0 to 5 years, 15.1% had 16 to 20 years, and 13% had 6 to 10 years (see Figure 3). Collapsing across categories, nearly one half of respondents have 16 years or more of cumulative teaching experience, and 65% have 11 years or more of cumulative teaching experience. There was somewhat less diversity in the highest level of education achieved. Over two-thirds, or 67.5%, of respondents earned a master's degree, 23.6% a bachelor's degree, and 8.9% a doctoral degree. They are more educated than teachers nationwide. The overwhelming majority of respondents held teaching certification: 95.2% of respondents had teaching certification, and 4.8% did not. Furthermore, the majority are full time teachers. 84.2% work 35 hours or more per week, 1.7% work 21 to 30 hours per week, 2.1% work 11 to 20 hours per week, and 12% work 0 to 10 hours per week. In sum, the respondent base is comprised of experienced, full-time teachers, who are certified and hold a master's degree.

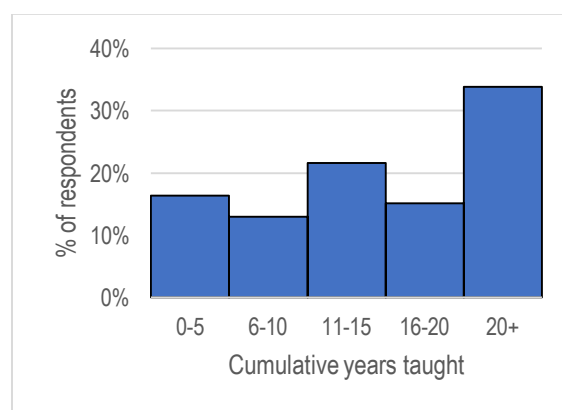


Figure 3. Cumulative years taught by respondents. This figure illustrates the proportions of respondents who had cumulative teaching experience for a given number of years.

School setting. Respondents indicated that they work in a variety of school settings. Nearly half work in a suburban area, and over a quarter work in an urban area and a rural area,

respectively (see Figure 4). Over half of respondents, or 57%, work in schools with community eligibility, where 65% or more of students receive free lunch.

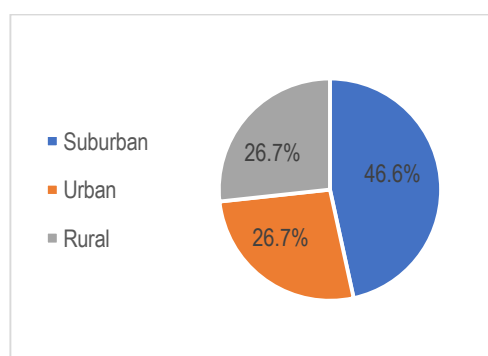


Figure 4. School settings of respondents. This figure illustrates the setting of schools where respondents worked.

Teaching load. Respondents provided information on student demographics, including race and ethnicity (see Table 3). Note that respondents only indicated rough proportions of student race and ethnicity for their teaching load. However, higher proportions of respondents indicated no students were African American (25.4%), Asian (46.3%), or mixed (26.9%). Comparatively fewer respondents indicated no students were Caucasian (7.1%). Furthermore, higher proportions of respondents indicated one-third or less of their students were African American (58.2%), Asian (50%), or mixed (60.4%). In contrast, 29.9% indicated one-third or less of their students were Caucasian. As seen in the table, more respondents indicated over one-third to two-thirds of students were Caucasian (29.1%), and that over two-thirds to all students were Caucasian (34%). In terms of ethnicity, over half of respondents indicated one-third or less of students were Hispanic (55.2%).

Percentages	Race				Ethnicity
	African American	Asian	Caucasian	Mixed	Hispanic
None	25.4%	46.3%	7.1%	26.9%	17.9%
1 – 33%	58.2%	50%	29.9%	60.4%	55.2%
34 – 66%	10.1%	2.6%	29.1%	8.6%	15.7%

67 – 100%	6.3%	1.1%	34%	4.1%	11.2%
<i>Note.</i> Since respondents indicated only rough proportions for each student race and ethnicity, percentages do not add up to 100%.					

Educational role. Respondents reported information on the age levels they teach, as well as on the types of classes they teach. Over half of the respondents indicated they teach elementary school, nearly one-third middle school and high school, respectively, and about one-fifth indicated they teach pre-school (see Figure 5). However, 23.7% of total respondents indicated they teach multiple age groups (see Figure 6). Over one-third of respondents teach elementary school only, 19.5% high school only, 13.2% middle school only, and 9.4% teach pre-school only.

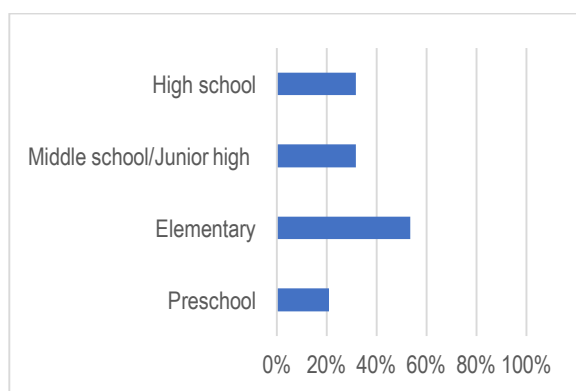


Figure 5. The age levels taught by respondents (non-exclusive). This chart shows the age level(s) that respondents teach.

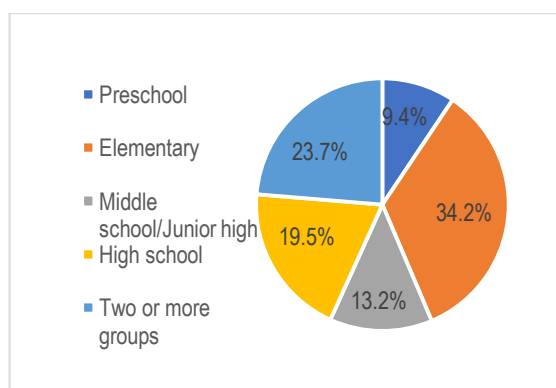


Figure 6. The age levels taught by respondents (exclusive). This chart shows the age level that respondents teach, with respondents who teach two or more age levels comprising their own group.

About half of the respondents indicated they are special education teachers, over a quarter indicated they teach a non-language intensive class, less than one-tenth indicated they teach a

language intensive class, and less than 3% indicated they teach an off-site job training or vocational program. Over one-fourth of respondents indicated they teach another type of class not listed (see Figure 7). After accounting for respondents who indicated they teach two or more classes, half (50.2%) of respondents are special education teachers only, and over one-fifth (22.4%) of respondents teach a language intensive class only, such as language arts, reading or writing (see Figure 8). 14.3% teach multiple types of classes, and 11% teach a non-language intensive class only, such as math, science, or physical education. A very small proportion teach an off-site job training or vocational program only.

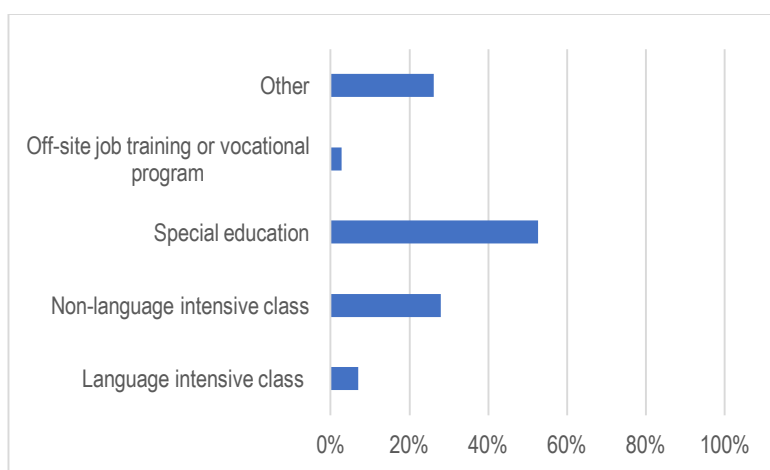


Figure 7. Classes taught by respondents (nonexclusive). This chart shows the type of class or classes taught by respondents.

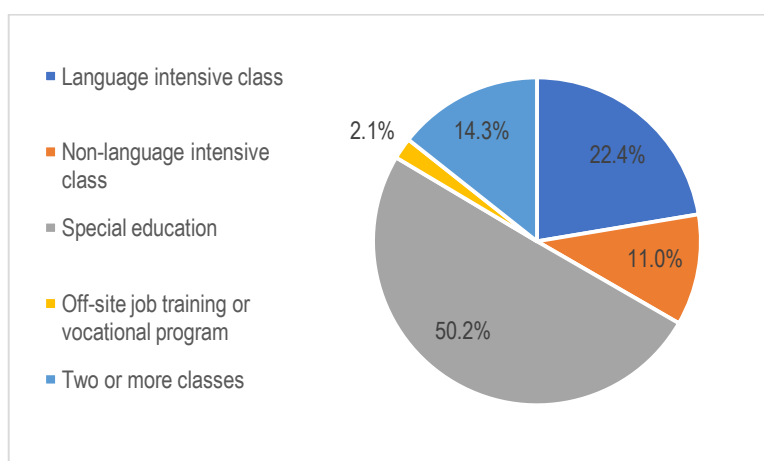


Figure 8. Classes taught by respondents (exclusive). This chart shows the type of class taught by respondents, with those respondents teaching two or more types of classes comprising their own group.

Respondents provided information on their teaching load, or the number of students in their class (see Figure 9). The majority of respondents indicated they have 0 to 10 students per class. This may be attributable to the fact that half of the respondents are special education teachers. Furthermore, this high proportion of special education teachers may also account for those respondents who indicated they teach 11 to 20 students in an average class. The 29.3% of respondents who indicated there are 21 to 30 students in an average class presumably include both special education teachers who do not teach in self-contained classrooms, as well as general education teachers.¹ Noticeably, only 5.3% indicated over 31 students are in an average class. In sum, respondents teach a variety of age levels and types of classes.

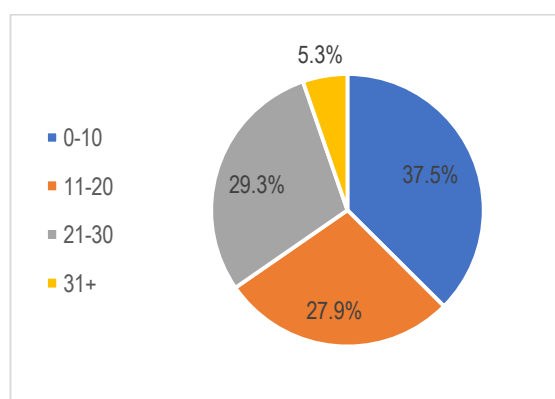


Figure 9. The number of children per class taught by respondents. This figure shows the number of students per class or number of students in a typical class taught by respondents.

Services. Respondents reported information about the services their students receive, including assistance of a paraprofessional, an individualized education plan (IEP), diagnoses, and services. 55.9% of respondents indicated they receive the assistance of a paraprofessional, or a teacher's assistant, and 44.1% do not. Among those respondents who work with a paraprofessional, there was diversity in the number of students assisted by a paraprofessional

¹ A self-contained classroom is a classroom comprised of special education students who receive most, if not all, of their coursework in that classroom. For example, a student in a self-contained classroom might take math, science, language arts, and social studies in the special education classroom, but attend lunch, physical education, and extracurricular activities with general education students.

(see Figure 10). Over one-third of respondents indicated a paraprofessional assists 2 to 5 students, and over one-fourth of respondents indicated a paraprofessional assists 6 to 10 students. 17.8% indicated a paraprofessional assists 16 or more students, and 11.2% indicated a paraprofessional assists 11 to 15 students. Only 7.2% indicated the paraprofessional assists an individual student.

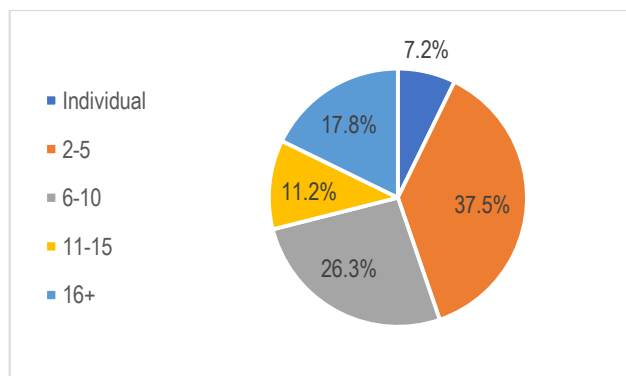


Figure 10. The number of students assisted by the paraprofessional. Of those teachers who indicated they receive the assistance of a paraprofessional, this figure shows the number of students a paraprofessional helps.

Spread out over each day, over one-half of respondents reported 1 to 10 students have an IEP (see Figure 11). An IEP is the legal document of a student with special education needs, which documents, among other things, the special education services needed to provide a free and appropriate public education. Over one-fourth of respondents reported they have 11 to 20 students per day with an IEP, followed by over one-tenth who have 21 to 30 students with an IEP, and about one in twenty who have no students with an IEP.

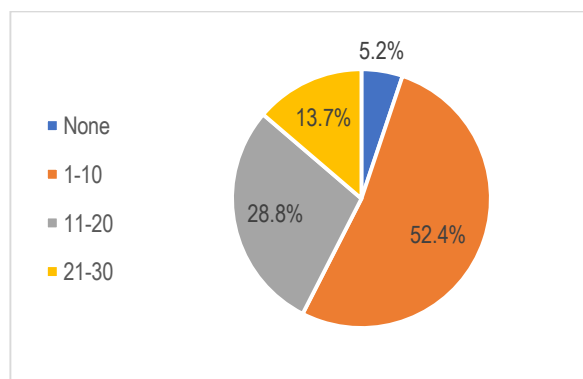


Figure 11. The number of students per day with an individualized education plan (IEP). This figure shows the number of students with an IEP per day that respondents teach.

Additionally, respondents reported the proportions of students who carry an educational or a medical diagnosis (see Figure 12) and who are receiving speech therapy services. Overall, the impression is that children who carry an educational or a medical diagnosis are predominantly among those who receive special education services. Over one-half (52.7%) indicated up to one-third of students carry an educational or medical diagnosis, over one-quarter (26.1%) indicated two-thirds or more of students carry a diagnosis, nearly one-fifth (17.6%) indicated one-third to two-thirds of students a diagnosis, and nearly none (3.4%) indicated no students carry a diagnosis.

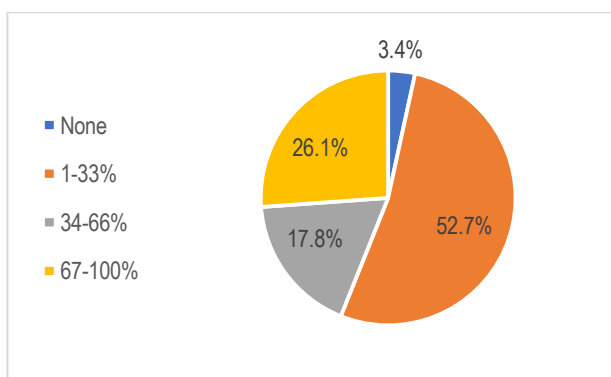


Figure 12. Percentage of students with an educational or medical diagnosis. This figure shows the proportions of students with an educational or medical diagnosis that respondents teach.

Note that the respective proportions of students receiving speech therapy services is similar to those of students who have an educational or medical diagnosis (see Figure 13). Over one-half (56.7%) of respondents indicated up to one-third of students receive speech therapy, about one-fifth (20.1%) indicated two-thirds to all students receive speech therapy, over one-tenth (13.8%) indicated one-third to two-thirds of students receive speech therapy, and less than one-tenth (9.4%) indicated no students receive speech therapy.

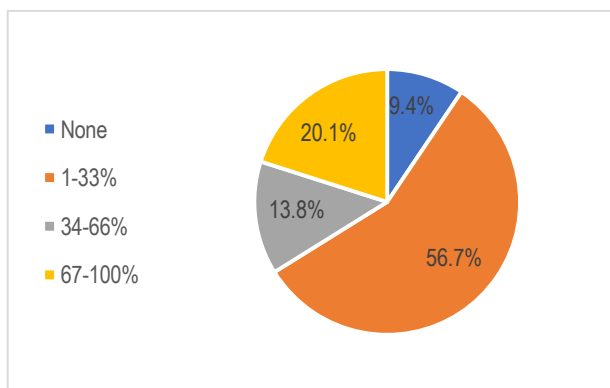


Figure 13. Percentage of students receiving speech therapy. This figure shows the proportions of students receiving speech therapy that respondents teach.

For those students receiving speech therapy, the most common setting for services reported was pull-out (85.8%), followed by push-in (66.7%), consultation (40.8%), and a very small proportion who indicated other (4.2%) (see Figure 14). The term “pull-out services” refers to students receiving speech therapy outside the classroom, the term “push-in services” refers to students receiving speech therapy services inside the classroom, and the term “consultation” refers to a speech therapist providing coaching or guidance to the teacher.

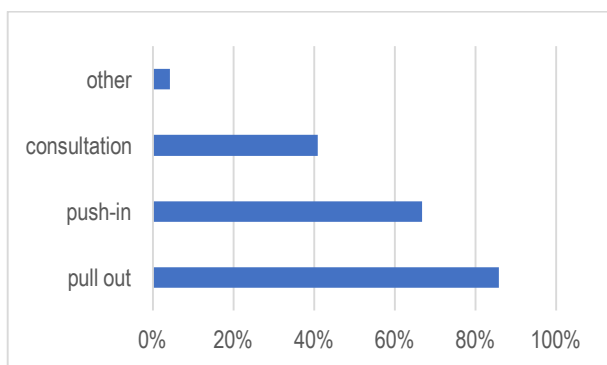


Figure 14. Settings for speech therapy. This figure shows the proportions of setting(s) for speech therapy of respondents' students.

Respondents reported on factors of eligibility for special education services (see Figure 15). Over 90% indicated the individualized education plan (IEP) team decision as a determining factor, over 70% indicated a local service provider policy, and nearly 60% indicated parental or caregiver input. An IEP team would generally include a general education teacher, special education teacher, school psychologist, parents, and other stakeholders deemed to be relevant in

determining a student's special education needs (Turnbull, 1993). In contrast, less than 40% reported speech-language pathologist judgment as a factor in determining eligibility for special education services.

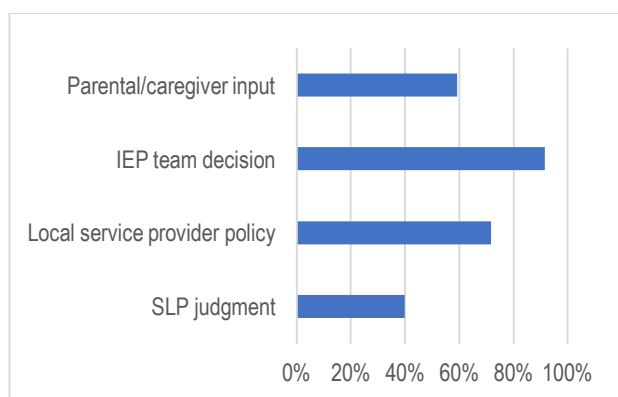


Figure 15. Elements determining eligibility for special education services. This figure shows the elements determining eligibility for special education services, as reported by respondents.

Professional practice. Respondents provided information on their scope of practice, including teaching practices and identification of students in need of further academic assistance (see Figure 16). Special education teachers generally did not differ from general education teachers in teaching methods or lesson formats used. Across respondent groups, 90.3% indicated they use a teaching method or lesson format in their practice. Of this group, a majority indicated they use direct instruction, or a teacher-led method of instruction (86.4%). Two-thirds each indicated they use core curriculum and cooperative learning. Core curriculum is a pre-designed curriculum that teachers implement, and cooperative learning means students work together to complete learning activities. However, more general education teachers (75.4%) than special education teachers (58.9%) indicated they use cooperative learning ($\chi^2(1)=7.436, p<0.01$). Over half each indicated they used project-based or problem-based learning, and discovery and inquiry based learning. While project-based or problem-based learning means students complete a project or solve a problem to learn course material, discovery and inquiry based learning means students generate questions about course material and develop answers through learning

activities. Noticeably fewer indicated they used concept teaching (35%), less than one-fifth selected the Socratic method, and about one-tenth use the workshop or Hunter model. Concept teaching refers to developing course material and activities around a given concept, the Socratic method refers to using inquiry and reasoning to drive learning, and the workshop or Hunter model is a format roughly consisting of teacher-led demonstration, student practice, and evaluation. Across groups, 12.8% indicated they use some other teaching method or lesson format. However, more special education teachers (18.6%) than general education teachers (6.1%) indicated that they use some other method ($\chi^2(1)=8.448, p<0.01$).

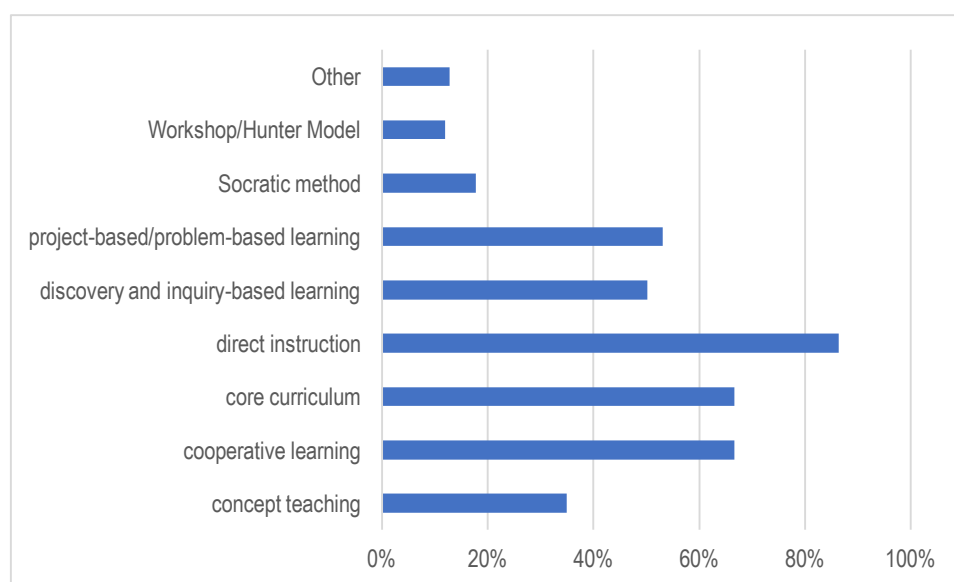


Figure 16. Teaching methods or lesson formats used by respondents. Of those respondents who indicated they use some teaching method or lesson format, this figure shows the method(s) or lesson format(s) used by respondents in their teaching.

Of the approximately one-tenth who indicated they do not use teaching methods or lesson formats in their practice, over three-fourths indicated they use multiple or mixed teaching methods, 16% indicated they use other, and less than one-tenth indicated they use a general method of how children learn.

Respondents indicated areas of emphasis in their teaching practice (see Figure 17). The greatest proportion of respondents (52.6%) indicated they emphasize language arts most. Over

one-third indicated they emphasize content knowledge (36.4%), interpersonal communication and social communication abilities (34.4%), and classroom behavior (34%) most. Over one-fourth indicated they emphasize the Common Core Learning Standards (27.9%) most, and significantly less respondents indicated they emphasize state assessments (8.1%) or social media and interactive learning opportunities (6.9%) most. The Common Core Learning Standards are the national educational standards designed to insure quality education for all students across the United States. Collapsing the upper limits of the scale, the rankings mostly hold: the greatest emphasis is on language arts (83.4%), followed by content knowledge (76.5%), classroom behavior (73.7%), interpersonal communication and social communication abilities (68.8%), Common Core Learning Standards (59.5%), social media and interactive learning opportunities (30%), and state assessments (24.3%).

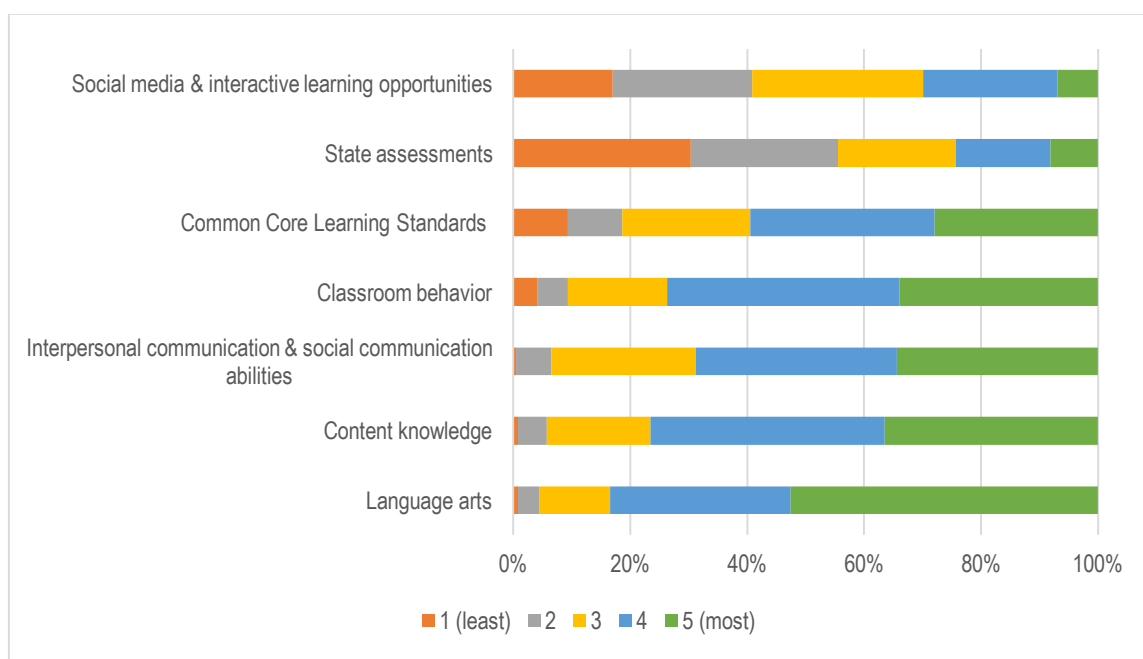


Figure 17. Teaching emphasis of respondents. This figure shows how much respondents emphasize various areas in their teaching.

These results are not surprising if accounting for the fact that over half of the respondents teach special education. Language arts and content knowledge pair together, as do interpersonal

communication and social communication abilities. Classroom behavior and interpersonal communication go hand-in-hand as well. In the case of Common Core Learning Standards, it is possible that respondents who teach students with disabilities are aligning to the standards to meet students at their current levels of performance, rather than teaching the standards themselves. The majority proportion of respondents who indicated that they emphasize state assessments least (30.4%) is consistent with this explanation. It is also possible the primary concern of respondents is following students' individualized education programs (IEPs). Students on the teaching load of special education teachers are more likely to take alternate assessments, and not standardized assessments from general education.

Respondents indicated the steps that they take for students who experience academic difficulty in the classroom, with no significant differences between special education teachers and general education teachers (see Figure 18). Note that these responses are based on actual teaching positions and practices. An overwhelming majority of respondents indicated they implement Response to Intervention – Tier I/II (90.2%) and consult with student's parents (82.9%). Response to Intervention is a hierarchy of intervention to support students; while Tier I refers to general academic practices for everyone, Tier II refers to in-class intervention that those students who don't respond to Tier I receive. Much smaller proportions of respondents would seek referral to the psychologist (24.8%), referral to the speech-language pathologist (24.4%), or some other step (23.2%). Noticeably, the steps that more respondents would take for a student experiencing academic difficulty in class are the ones that are less taxing in terms of time and resources required. In other words, it takes less time and effort to deliver interventions that can be done in the classroom within the scope of the school day, as well as to communicate with a student's parents, than it does to set up a referral. In fact, teachers may not be the ones to make

the final call on referrals, but rather someone outside the classroom, such as a special education coordinator.

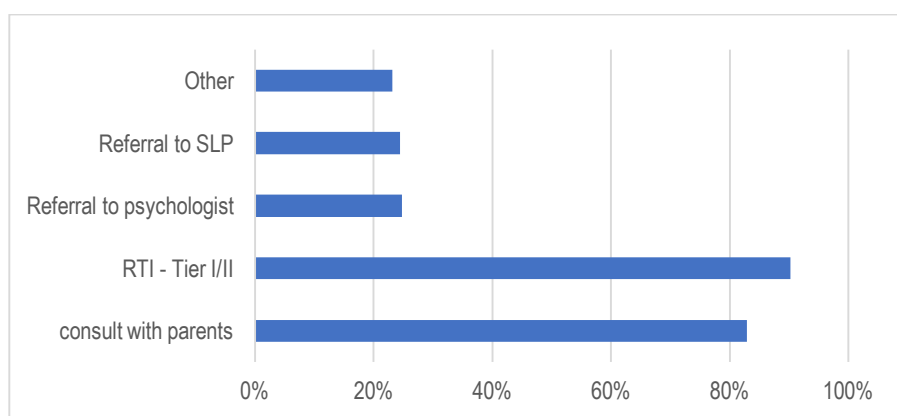


Figure 18. General practice for students with academic difficulty. This figure shows the step(s) that respondents take when a student is experiencing academic difficulty in the classroom.

In delivering in-class intervention, too, the most commonly selected methods were ones that were less taxing on time and resources (see Figure 19). Special education teachers and general education teachers did not differ in their responses. More than 80% of respondents indicated in-class intervention methods including: individual or small group work (89.8%), differentiation (87.4%), and monitoring student performance (85%). Individual or small group work refers to providing students with opportunities for higher teacher-to-student ratio instruction, differentiation means modifying the curriculum to make it accessible to students with special education needs, and monitoring student performance means checking on how a student is doing in the classroom. Other methods were less popular: 67.9% selected classroom management, and 57.3% selected curriculum-based measurement or other screening system. Classroom management refers to arranging the educational environment to meet a student's special education needs, and implementing a curriculum-based measurement or screening system refers to using some measure to assess student progress. The most popular methods, monitoring student performance, individual or small group work, and differentiation, may be part of respondents' general teaching practices even when a student is not experiencing academic

difficulty in the classroom. The less selected methods, classroom management and administering a curriculum-based measurement or screening system, may be explained by the relatively greater time and effort to implement. Such methods may be outside the scope of respondents' educational role.

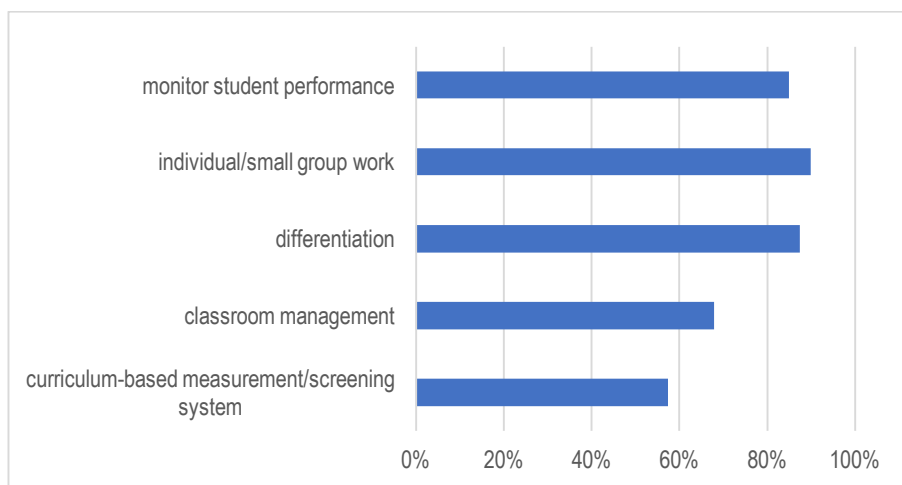


Figure 19. In-class intervention methods. This figure shows the method(s) that respondents use when delivering in-class intervention.

Finally, respondents indicated the frequency of their collaboration with other education professionals (see Figure 20), as well as with students' parents (see Figure 21). Nearly half of respondents indicated they collaborate with the special education teacher daily (48.2%). This may be due to the fact that half of total respondents are special education teachers working with other special education teachers, or it may be that their teaching load requires daily collaboration with special education teachers. A minority of respondents indicated they never collaborate with the psychologist (36.1%), the reading teacher (29.6%), or the speech-language pathologist (18.7%). Collapsing "never" and "monthly" into one category reveals that significantly more respondents indicated they collaborate never to monthly with the psychologist (71.2%). Yet, the frequency at which teachers collaborate with the speech-language pathologist and reading teacher is spread more evenly across categories.

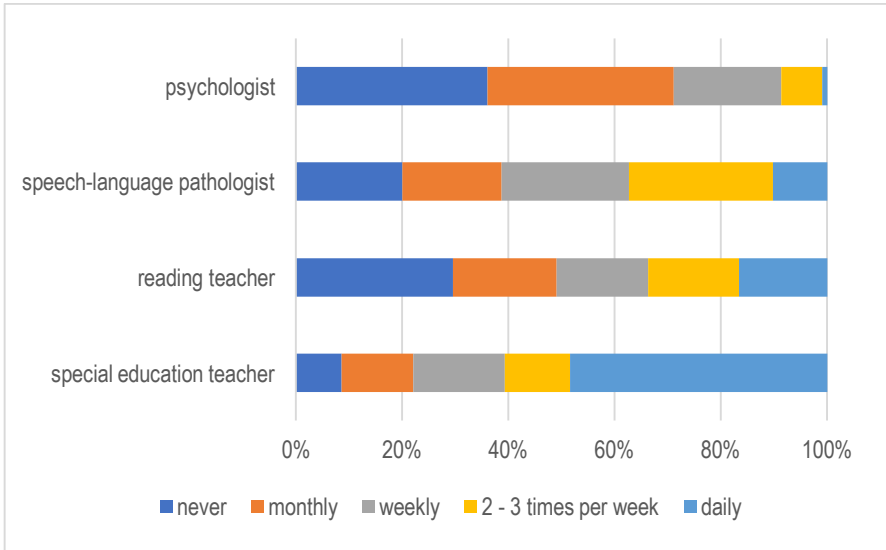


Figure 20. Collaboration of respondents with other education professionals. This figure shows the frequency of collaboration between respondents and other education professionals.

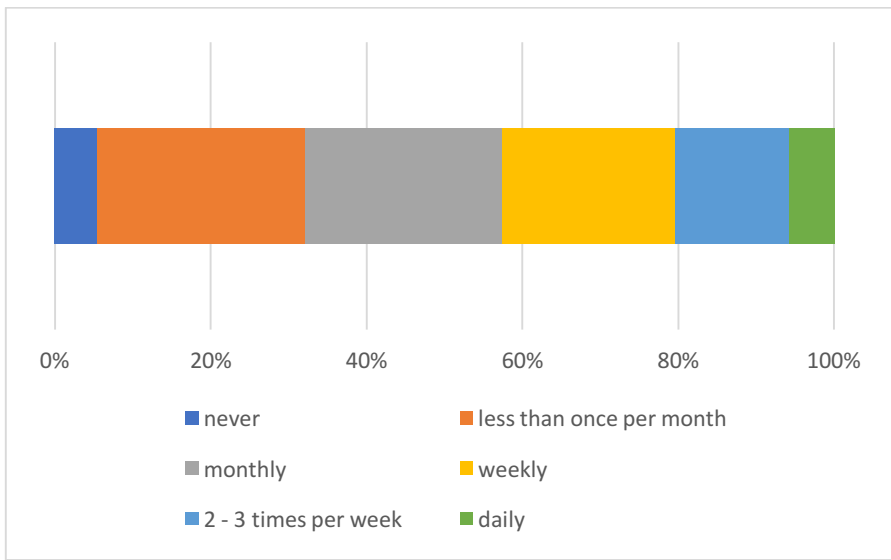


Figure 21. Collaboration of respondents with parents. This figure shows the frequency of collaboration between respondents and students' parents.

Chapter 4 : Results

Case study summaries

After providing information on demographics, work setting, and scope of practice, respondents answered questions based on a series of case studies. These were an instantiation of specific examples, independent of practice setting. Each case study corresponded to a different student profile with SLI (see Table 3). For each case study, respondents indicated if they would

recommend additional services, if they would recommend additional outside services, and if they would implement in-class intervention. If respondents did not recommend additional services, they were asked to provide the reasons why and if they would implement in-class intervention. If respondents referred a student for additional services, but not additional outside services, they were also asked if they would provide in-class intervention. All respondents who indicated they would provide in-class intervention were asked what in-class intervention they would provide, and finally, all respondents were asked what a student in a given case study needed to work on. To prevent bias in judgment, initials rather than names were used.

Table 3. <i>Case Study Characteristics</i>						
	Case A	Case B	Case C	Case D	Case E	Case F
Language impairment	+	BL	+	+	BL	BL
Vocabulary impairment	+	BL	?	+	BL	?
Finiteness impairment	+	+	?	+	?	?
Speech impairment	-	-	-	?	?	?
Pragmatics impairment	-	-	+	?	+	?
IQ specified	-	-	-	-	-	typical
<i>Note.</i> “+” indicates that a case study carries a feature, such as a language impairment. “-“ indicates that a case study does not have a feature, such as a speech impairment or IQ specified. “BL” indicates that a case study carries a borderline level of impairment for a feature, such as a vocabulary impairment. “?” indicates that a case study did not have information on that feature, such as a pragmatics impairment.						

Case A was a 7 year, 5-month-old male with LI, vocabulary impairment, and finiteness impairment. Case A did not have a speech impairment or pragmatics impairment, and no information on nonverbal IQ was provided. In class, Case A was shy and mumbled, but otherwise did not have difficulty getting along with classmates. He demonstrated difficulty with the past tense and word learning, such that he could be difficult to understand. Sometimes he zoned out.

Case B was an 8 year, 10-month-old female with borderline LI, borderline vocabulary impairment, and finiteness impairment. Case B did not have a speech impairment or pragmatics impairment, and information on nonverbal IQ was not provided. Case B was receiving speech-language therapy, and had difficulty with pronouns, the past tense, and the present progressive *-ing*. In class, Case B was outgoing, a hard worker, and performed at or above grade level. Her parents reported she seemed to have difficulty keeping up in a conversation with her friends.

Case C was a second-grade male with language impairment and a pragmatics impairment. He did not have a speech impairment. Information on vocabulary, tense-marking, and nonverbal IQ were not provided. In class, Case C had trouble fitting in, avoided communicating with classmates, and tended to ramble. He also had difficulty requesting, disagreeing, and role-playing, which his peers were able to do.

Case D was a first-grade female with LI, vocabulary impairment, and finiteness impairment. Information on speech, pragmatics, and nonverbal IQ were not provided. In class, Case D had difficulty learning new content, including vocabulary and spelling words, and retaining information. Her parents reported she sometimes forgot to say plural *-s*, third-person singular *-s*, and the past tense *-ed*. She also made mistakes with the past tense. However, Case D had normal kindergarten-readiness skills and typical development.

Case E was a 7 year, 4-month-old male with borderline language impairment, borderline vocabulary impairment, and pragmatics impairment. Information on tense-marking, speech, and nonverbal IQ were not provided. He was receiving speech-language therapy, where he worked on communication skills. In class, he was off task and out of his seat. He also avoided work and chatted with friends while the teacher was talking. When asked a question, he shrugged his shoulder, and in class activities, he zoned out.

Case F was an 11 year, 7-month-old female in 5th grade with borderline levels of language impairment and normal nonverbal IQ. Information on vocabulary, speech, pragmatics, and tense-marking were not provided. She had an IEP and received special education services for math, science, language arts, and social sciences. In class, she was quiet, a hard worker, and read well. She experienced difficulty with reading comprehension, and was short both in conversational exchanges and her writing. Case F seemed to struggle with group work and laughed off questions from classmates.

The characteristics of the case studies gave rise to several general predictions (see Table 4). First, it was predicted that borderline levels of language impairment would be an inhibitive factor against recommendation for additional services. This means that all other things being equal, Cases B, E, and F should be recommended for additional services at lower rates relative to Cases A, C, and D. Second, it was predicted that a pragmatics impairment would be a protective factor for recommendation. Thus, all other things being equal, Cases C and E should be recommended for additional services at higher rates relative to Cases A, B, D, and F. Third, it was predicted atypical behavior in the classroom, such as disruptive behavior, social awkwardness, or hard-to-understand speech, would be a protective factor for recommendation (Redmond, 2016; Redmond, Ash, & Hogan, 2015). All other things being equal, Cases A, C, and E should be recommended for additional services at higher rates relative to Cases B, D, and F. Fourth, it was expected that students who were more typical in academic performance and social skills would be identified as in need of further services at a lower rate. This means that all other things being equal, Cases B and D should be recommended for additional services at lower rates relative to Cases A, C, E, and F. Fifth, it was predicted that gender would be an inhibitive

factor for females and a protective factor for males. This means that all other things being equal, Cases B, D, and F should be identified at lower rates than Cases A, C, and E. Note that this last prediction maps right onto the prediction about atypical classroom behavior; the female students in the case studies did not display atypical classroom behavior. It was unknown whether comorbidity of language impairment with vocabulary impairment and finiteness impairment would act as a protective factor for recommendation.

Table 4.		
<i>Case Study Predictions</i>		
Factors		Cases affected
Inhibitive: decrease likelihood of recommendation for additional services	Borderline levels of language impairment	B, E, F < A, C, F
	Typical academic performance & social skills	B, D < A, C, E, F
	Gender (inhibitive for females)	B, D, F < A, C, E
Protective: increase likelihood of recommendation for additional services	Pragmatics impairment	C, E > A, B, D, F
	Atypical behavior in the classroom	A, C, E > B, D, F
	Gender (protective for males)	
<i>Note.</i> The predictions are made on the assumption that all other characteristics are equal. Cases affected denotes the case studies which carry the inhibitive or protective factor. Therefore, they are the cases which will have a decreased or increased likelihood of recommendation for additional services.		

Outcomes

Overall, the rates at which students were recommended for additional services varied across case studies ($\chi^2(5)=145.138, p<0.001$) (see Figure 22). Across case studies, the rates of recommendation for additional services were: 87.5% for Case C ($N=198$), 82.9% for Case A ($N=215$), and 70.1% for Case E ($N=184$). In contrast, the rates of referral for additional services were: 56.0% for Case F ($N=179$), 55.8% for Case D ($N=184$), and 34.5% for Case B ($N=199$).

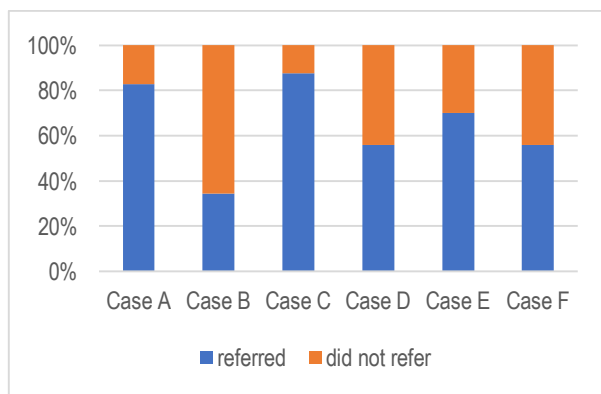


Figure 22. Recommendation for additional services by case study. This figure shows the rates at which respondents recommended additional services for each student in the case studies.

This response pattern was consistent with the predictions. First, Case B and Case F suggest that borderline levels of language impairment were an inhibitive factor against recommendation for additional services. Second, Case C and Case E suggest that a pragmatics impairment acted as a protective factor for recommendation. Third, atypical behavior also appeared to be a protective factor for recommendation. Case A had hard-to-understand speech, Case C was socially awkward, and Case E had disruptive behavior in the classroom. Fourth, “typical” academic performance and social skills had lower rates of referral, as seen in Case B and Case D.

Respondents also varied in the rates at which they recommended additional outside services across case studies ($\chi^2(5)=19.634, p<0.01$) (see Figure 23). Of those respondents who recommended additional services, 37% recommended additional services for Case A, 46.6% for Case B, 52.4% for Case C, 52.3% for Case D, 63.9% for Case E, and 47.6% for Case F.

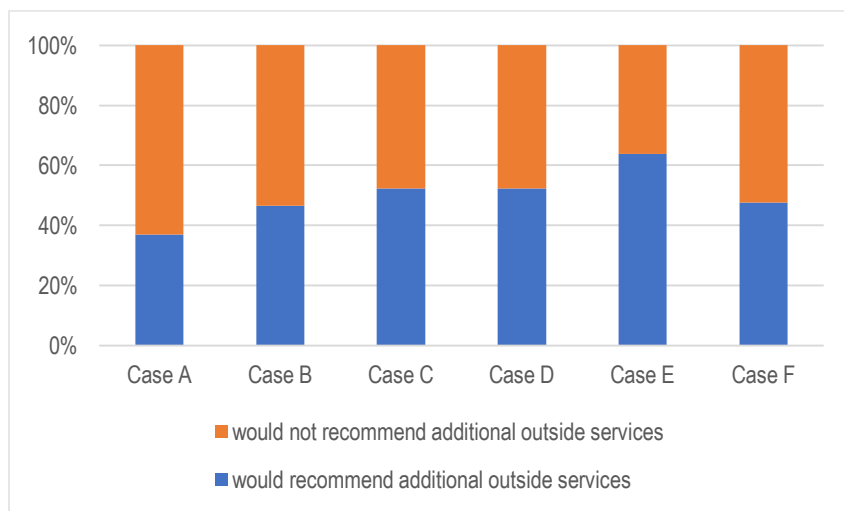


Figure 23. Recommendation of additional outside services by case study. Of those respondents who recommended additional services for a student in the case studies, this figure shows the rates at which respondents would also recommend additional outside services.

Furthermore, respondents varied in the additional outside services they recommended by student profile (see Figure 24). Across case studies, referrals differed significantly for the speech-language pathologist ($\chi^2(5)=33.688, p<0.0001$), psychologist ($\chi^2(5)=118.428, p<0.0001$), special education teacher or coordinator ($\chi^2(5)=80.540, p<0.0001$), resource room or Learning Center ($\chi^2(5)=50.603, p<0.0001$), or some other service ($\chi^2(5)=100.244, p<0.0001$).

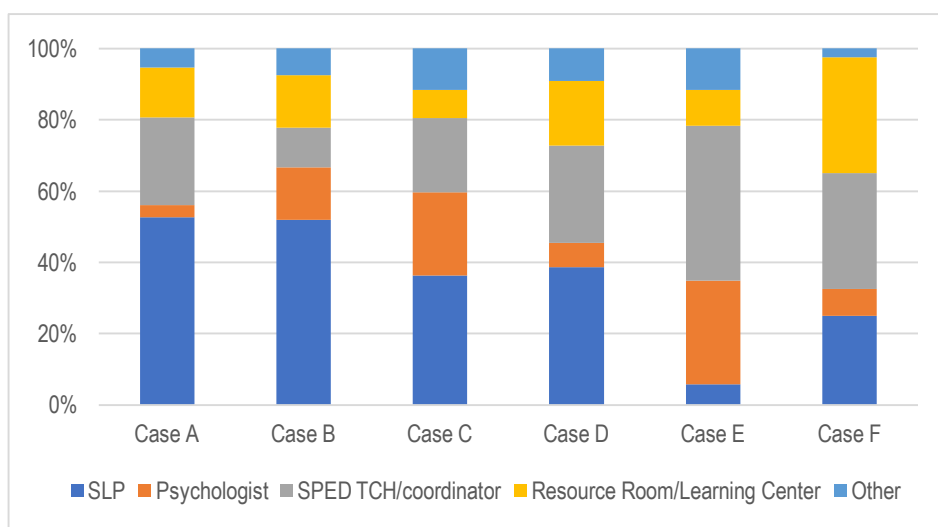


Figure 24. Additional outside referral by case study. Of those respondents who recommended additional outside services for a given student in the case studies, this figure shows to whom they would refer the student.

Co-morbidity of language impairment with vocabulary impairment, finiteness impairment, a difference in quality of speech, and a difference in communicative skills, may have acted as a protective factor for referral to the SLP. Referral rates to the SLP are: 52.6% for Case A, 51.9% for Case B, 38.6% for Case D, and 36.4% for Case C. One possibility is respondents were more aware of students' language difficulties. However, note that rates of referral to the special education teacher or coordinator are also high across cases: 43.5% for Case E, 32.5% for Case F, 27.3% for Case D, 24.6% for Case A. A special education teacher or coordinator may be an expert in schools who is responsible for organizing and implementing special education. It is likely few respondents thought to refer Case B to the special education teacher or coordinator due to her ability to work at or above grade level. Furthermore, only Case F is referred to the resource room or Learning Center at a relatively high rate (32.5%). Another possibility is that respondents failed to appreciate the underlying language difficulties in student profiles. In the cases with pragmatics impairment, Case C and Case E, referral rates to the psychologist are relatively higher: 29% for Case E and 23.4% for Case C. This is especially striking considering that only 5.8% referred Case E, who unlike Case C, had disruptive behavior in the classroom, but no apparent social difficulties in his interactions with peers.

Respondents indicated their reasoning for not recommending additional services. Overall, there were differences in their reasoning across case studies. There was variation in the rates at which they would implement in-class intervention first ($\chi^2(5)=15.668, p<0.01$), although this was visibly the most popular selection (see Figure 25). More respondents would provide in-class intervention to students with language impairment: 90.6% for Case A, 90% for Case C, and 79.4% for Case D. Fewer respondents would implement in-class intervention for the female

students with borderline language impairment, 65.5% for Case B and 63.6% for Case F, as well as for the student with disruptive classroom behavior, 69.6% for Case E.

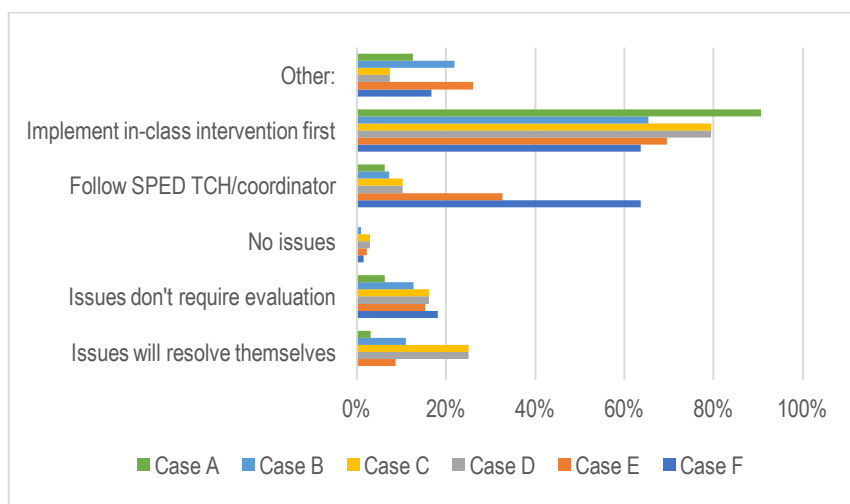


Figure 25. Reasons for not recommending additional services by case study. Of those respondents who did not recommend additional services for a student in the case study, this figure shows the reason(s) why they did not recommend additional services. The term "SPED TCH/coordinator" refers to the special education teacher or coordinator.

Respondents indicated they would follow the directions of the special education teacher or coordinator at varying rates ($\chi^2(5)=53.914, p<0.0001$). More selected they would do so for Case F (63.6%), the adolescent female student with borderline language impairment and who already is receiving special education services in core coursework as per her IEP. Roughly one-third of respondents indicated they would follow the directions of the special education teacher or coordinator for Case C (35%) and Case E (32.6%), the students carrying a pragmatics impairment. The smallest proportion reported they would do so for Case A (6.3%) and Case D (10.3%), who both carry a language impairment, vocabulary impairment, and finiteness impairment, as well as for Case B (7.3%), who has good academic performance.

Other response rates for why respondents would not recommend additional services across case studies were relatively low. Nearly none of the respondents believed that the student in each respective case study did not have issues. Respondents varied in the rates at which they believed a student's issues would resolve themselves ($\chi^2(5)=25.301, p<0.0001$). One-quarter

(25%) of respondents believed issues would resolve themselves for Case D, the young first-grader with language impairment, vocabulary impairment, and finiteness impairment, but who otherwise has normal kindergarten-readiness and typical development. In comparison, one-tenth of respondents indicated the issues of Case B (10.9%), the student performing at or above grade level, would resolve themselves, followed by nearly identical rates for Case C (10%) and Case E (8.7%), who both carried a pragmatics impairment. Strikingly, 0% of respondents believed the issues of the older female student receiving special education services, Case F, would resolve themselves.

Across case studies, less than one-fifth of respondents believed a student's issues did not require evaluation, with no significant differences. 18.2% indicated this for Case F, who was already receiving special education services, 16.2% for Case D, 15.2% for Case E, 12.7% for Case B, and 6.3% for Case A. Finally, respondents did not vary significantly in the rates at which they would not recommend additional services for some other reason. One-quarter of respondents (26.1%) indicated some other reason for Case E, one-fifth (21.8%) for Case B, over one-tenth for Case F (16.7%) and Case A (12.5%), and less than one-tenth for Case D (7.4%) and Case C (5.0%).

All respondents, regardless of additional service recommendations, showed variation in the rates at which they would provide in-class intervention across case studies ($\chi^2(5)=126.614$, $p<0.001$) (see Figure 26). Note that in-class intervention is roughly analogous to Response to Intervention – Tier I/II services. While a majority would provide in-class intervention for Case A (98.9%), Case B (99.8%), Case C (90.4%), Case D (89.6%), and Case F (90%), a proportion closer to chance would provide in-class intervention for Case E (64.9%). The comparatively low rate for Case E may be explained by the fact that the student's pragmatics impairment and

borderline language impairment, which appeared mostly as noncompliant classroom behavior, masked the need for in-class intervention.

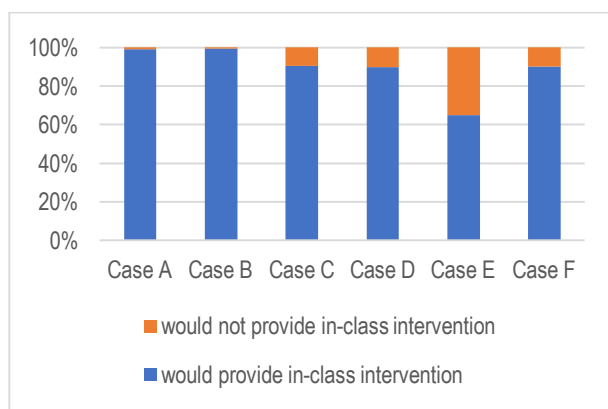


Figure 26. Respondents who would provide in-class intervention by case study. Across all respondents, regardless of recommendation for additional services, this figure shows the rates at which in-class intervention would be provided to each student in the case studies.

Among types of in-class intervention that would be provided, the most popular methods were those that require less in the way of time and resources, and are likely to already be part of the respondents' teaching repertoire (see Figure 27). More popular methods included monitoring student performance, individual or small group work, and differentiation. Across case studies, 80.9% of respondents would monitor student performance and 80.4% would use individual or small group work, with no significant differences. Furthermore, 70.3% of respondents would use differentiation, also with no significant differences.

Less popular methods included classroom management strategies, curriculum-based measurement or a screening system, or some other method. Over one-third (42.2%) indicated they would use classroom management strategies, but at varying rates across case studies ($\chi^2(5)=60.598, p<0.0001$). Just 22% indicated they would use classroom management strategies for Case E. One-third (33.3%) indicated they would use curriculum-based measurement or a screening system, although there was variation across case studies ($\chi^2(5)=16.760, p<0.01$).

Across case studies, less than one-tenth (8.4%) would use some other method. Note that the in-class intervention methods from the case studies are slightly lower than what respondents indicated they use in their general in-class intervention methodology (see Figure 28).

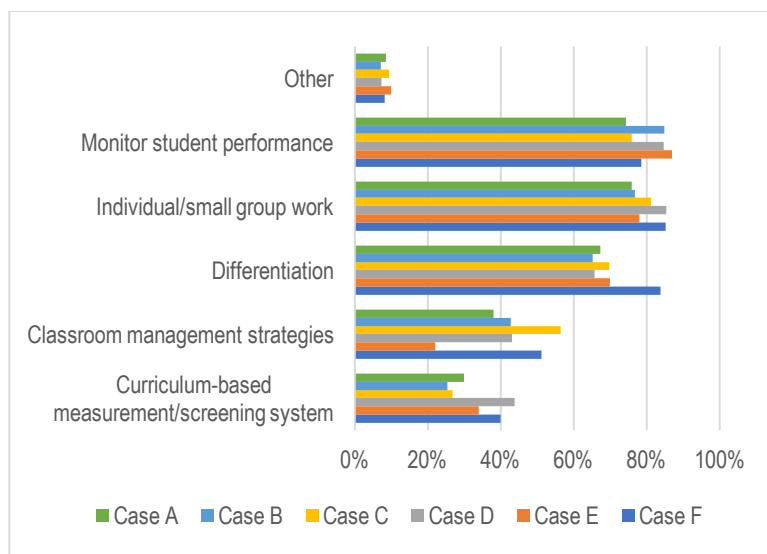


Figure 27. In-class intervention methods by case study. Of those respondents who indicated they would provide in-class intervention to a student in the case studies, this figure shows the intervention method(s) they would use.

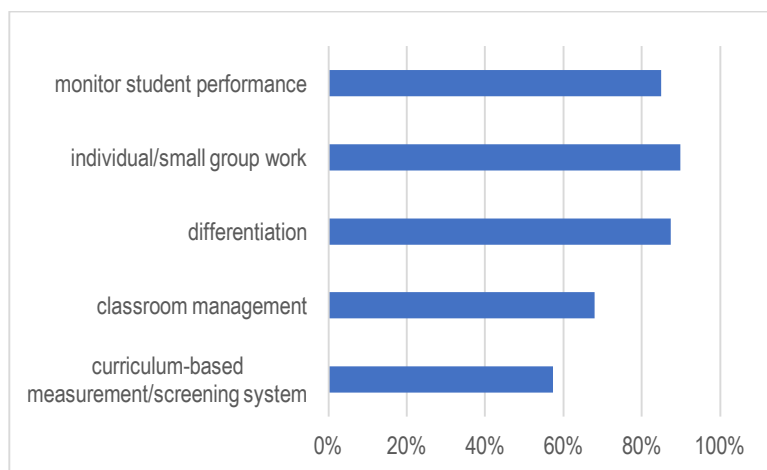


Figure 28. In-class intervention method(s) in general. This figure shows the in-class intervention method(s) that respondents use in general when a student is experiencing academic difficulty in the classroom.

Finally, respondents indicated areas for improvement per case study (see Figure 29).

Roughly two-thirds (66.5%) believed students needed to work on language, but differed in their rates across case studies ($\chi^2(5)=57.099, p<0.0001$). Case A was identified as needing to work on language by 82.5% of respondents, Case B by 78.7%, Case D by 72.7%, and Case by F 67.4%.

Fewer identified the students with pragmatics impairments in addition to language impairments as needing to work on language: 58.8% for Case C and 39.1% for Case E. This carried over to pragmatics, which was identified at lower rates as in need of improvement (43.8%), but with variation ($\chi^2(5)=32.941, p<0.0001$). Case C was identified as needing to work on pragmatics above chance (61.5%). Case E was identified at a lower rate (48.4%), which may be attributable to his pragmatics impairment manifesting mostly as noncompliant behavior. Other students from the case studies were identified at lower rates.

Other areas of improvement included articulation/speech, fluency, voice, or some other area. 30.8% of respondents believed students needed to work on articulation/speech, although there was variation across students ($\chi^2(5)=98.819, p<0.0001$). 57.9% of respondents believed Case A, who mumbles, needed to work on articulation and speech. Recommendation rates for other students were not above chance, with 40% believing Case D needed to work on articulation and speech, and roughly one-third (35.8%) for Case C. 25.2% of respondents believed students needed to work on fluency, but at varying rates ($\chi^2(5)=20.280, p<0.01$). The greatest proportion of respondents believed Case A (36.6%) needed to work on fluency, and the least believed so for Case E (12.5%). Relatively few respondents believed students needed to work on voice (15.5%), but again, with variation across case studies ($\chi^2(5)=97.291, p<0.0001$). Unsurprisingly, the mumblor, Case A, was identified at a relatively higher rate (38.8%), as was Case C, who avoids communication (23%). Last, 18.5% of respondents believed students needed to improve in some other area at different rates across case studies ($\chi^2(5)=82.326, p<0.0001$). One-half of respondents identified Case E (50.0%) and one-quarter identified Case F (26.2%) as needing to improve in some other area. It may be that respondents had difficulty recognizing Case E's underlying impairments and Case F's areas of need beyond the special education services she

was already receiving. Note that respondents recommended the students in the case studies improve in areas, namely articulation/speech, fluency, and voice, where students did not carry impairments.

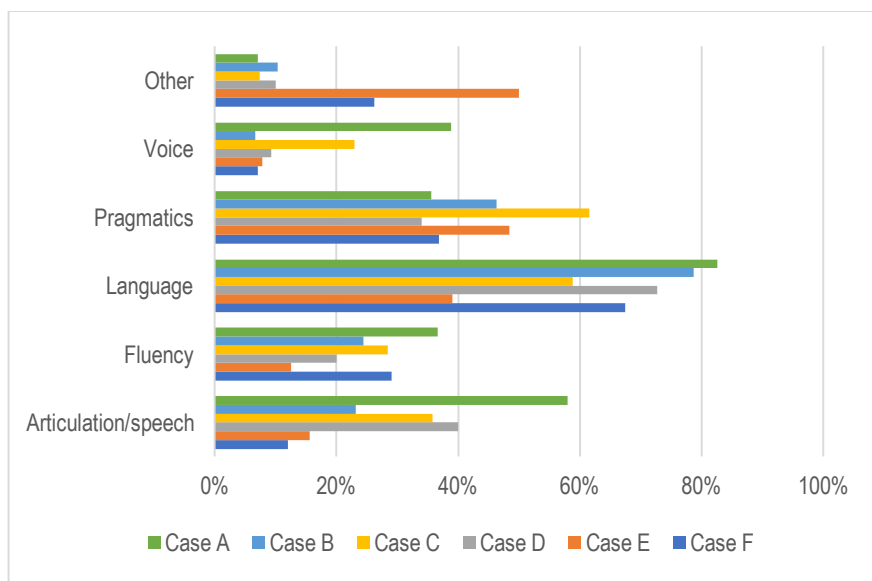


Figure 29. Areas for improvement by case study. Across all respondents to a case study, this figure shows the areas that respondents indicated a student needed to work on.

Practitioner by case studies

Finished survey vs. dropped out of case studies. The teaching practices of respondents who completed the case studies did not vary from those respondents who did not finish the case studies. This latter group includes those who dropped out in the first half of the survey, as well as those who dropped out in the case studies. Respondents did not differ in their teaching methods and lesson formats, teaching emphasis, general practices for students experiencing academic difficulty in the classroom, or in the in-class intervention methods that they used.

Special educators vs. non-special educators. Across case studies, more non-special educators (22.1%) than special educators (5.1%) indicated the case studies were not applicable to their teaching background. This difference was significant for Case A only, ($\chi^2(1)=12.39$, $p<0.01$). There was no difference between respondents in the rates at which they recommended

additional services for each student, additional outside services, or to whom they recommended each student for additional outside services. Furthermore, special educators did not differ from general educators in their reasoning for not recommending additional services across case studies, in-class intervention rates, or types of in-class intervention that they would provide. Last, respondents only differed for Case E in identifying areas of improvement for each case study. More special education teachers (50%) than general education teachers (11.1%) indicated that Case E needed to work on language ($\chi^2(1)=8.22, p<0.01$).

Attrition

Within case studies, there was 18% total attrition, dropping from 215 respondents to 177 (see Figure 30). Nearly one-fifth of respondents dropped out between Case A and Case F. There was roughly the same rate of dropout between the first and second half of the survey, with 8% attrition in the first half and 10% in the second half. By case study, there was the greatest level of attrition between Case A and Case B (7%). It may have been that once respondents realized the work required to read and provide answers to a case study, they dropped out, or that they felt out of their comfort zone for making decisions.

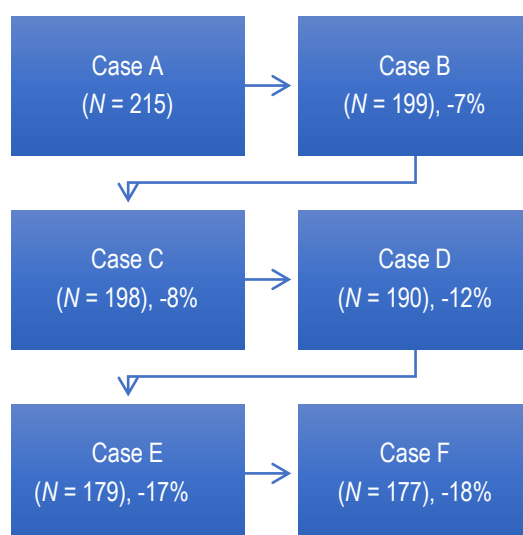


Figure 30. Cumulative rate of attrition across case studies. This figure shows the cumulative rate of respondents who dropped out of the survey across case studies.

Chapter 5 : Discussion

In addressing to what extent teachers work with students with disabilities, and to what extent teachers are able to identify and provide services for students with SLI, this survey found that respondents were attuned to students' differences in the way of interindividual variation. Yet, respondents seemed to be less sensitive to identifying some dimensions as potential clinical or education needs. The implications for the study's predictions are as follows.

First, the survey results do not support the prediction that special education teachers would differ from general education teachers in educational practices, as well as in their knowledge of grammar and language. Special education teachers and general education teachers did not differ in their general education practices, and, as measured by the case studies, generally did not differ in their knowledge of grammar and language. This implies that the differences in special education and general education teacher preservice training are perhaps irrelevant as far as language difficulties are concerned.

Second, the data are consistent with the prediction that teachers will play a role in identifying children with SLI, but will struggle to do so. 91.5% identified an IEP team decision, which most probably includes teachers, as an element determining eligibility of special education services. Furthermore, 90.2% identified providing Tier I or Tier II intervention to children experiencing academic difficulty in the classroom. However, the data from the case studies demonstrate variable rates of recommendation for additional services. For those recommending additional outside services, both the rates of recommendation for additional outside services and rates of referral to speech-language pathologists are at or below chance. One conclusion from these case studies is that teachers don't know what to do with students with SLI. This adds to prior findings that general education teachers were not prepared to address the needs of students

who do not respond to basic classroom instruction of (Brownell et al., 2005; Brownell et al., 2010).

Third, the survey results confirm the prediction that teachers will play a role in providing intervention to children with SLI, and that in-class intervention would be a popular method of intervention delivery. In general, a high rate of teachers indicated they would provide Tier I or Tier II in-class intervention to a student experiencing academic difficulty in the classroom. Additionally, respondents indicated they would provide in-class intervention for the students in the case studies, with Case E (64.9%) being an exception. It is unclear what percentage of students receiving in-class intervention move on to receive more formalized special education services.

Fourth, the prediction that teachers would face deficits in their knowledge of language and language instruction is supported. Over half (52.6%) the respondents indicated they emphasize language arts most. Yet, the rates of referral for additional services, rates of referral to the SLP, and recommended areas of improvement across case studies suggests that they did not appreciate the grammatical deficits of children with SLI.

Fifth, it was impossible to ascertain the effect of gender across the case studies. This is because the survey was not designed to explicitly examine gender, but rather, was designed to examine instantiated cases of children with SLI in the classroom. Remember that the female students, Cases B, D, and F, also had typical classroom behavior. Conversely, the male students, Cases A, C, and E, had atypical classroom behavior. Thus, while visual inspection of the data suggests that Cases A, C, and E were indeed recommended for additional services at higher rates relative to Cases B, D, and F, it is impossible to separate typical or atypical classroom behavior from gender.

While this survey contributed to what is known about the identification of students with SLI, there were several limitations. One limitation to this study was sample bias. The teachers who elected to participate in the survey may differ from teachers who did not complete this study. Those who participated in the survey, and specifically, those who completed the survey, may be the most motivated and cued into the issues of this survey. If this is the case, the responses may not be indicative of the teacher population at large. A second limitation is that respondents may not act in the classroom as they indicated they do in the case studies. Third, the survey did not drive into the various aspects of language or the grammar. Such knowledge would undoubtedly shed light into what teachers know about language at a more fine-grained level. Similarly, the questionnaire did not drive into the chain of referral that gets a student who is having trouble in the classroom to special education services. A better understanding of this process would be insightful as to how students with SLI are making their way through the educational system. Finally, this survey did not probe into detailed methods of intervention for children with language difficulties. It is still unknown exactly what constitutes intervention and method of delivery, whether from the teacher, an assistant, or a related service provider. These would be fruitful, and interesting, directions for future research. The overarching question that remains is why children with SLI remain unidentified in the educational system.

In sum, this survey contributed to what is known on the identification of students with SLI. In focusing on the extent to which teachers are able to identify and provide services for students with SLI, this survey found that both special education and general education teachers struggled with identification and provision of services. Given this, it is unsurprising that students with SLI remain underdiagnosed and underserved (Redmond, 2016; Redmond et al., 2016;

Tomblin et al., 1997). Workable solutions to this issue might include preservice/in-service training or increasing interdisciplinary collaboration with speech-language pathologists.

Whatever the case, students with SLI merit more rigorous advocacy to insure better outcomes across the life span. This requires that teachers know about typical and atypical language development, and how to differentiate between the two.

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