

Research Article

Current Practice of Child Grammar Intervention: A Survey of Speech-Language Pathologists

Lizbeth H. Finestack^a and Kayla E. Satterlund^a

Purpose: The aim of this study was to better understand current grammatical intervention approaches. Despite grammatical language being a common weakness among children with language impairment, relatively little is known about current grammatical intervention practices of speech-language pathologists (SLPs). Such information is needed to guide the development and evaluation of grammatical interventions and to identify areas in which the current practice is not empirically supported.

Method: Participants included 338 SLPs working primarily with children. Participants completed an online survey regarding their implementation of nine different grammatical intervention components, including goals, procedures, dosage, agents, contexts, goal attack strategies, service delivery models, activities, and outcome measurements. Participants also indicated how they would alter the

intervention setting and dosage if resources were unlimited.

Results: We grouped participants based on the ages of children that represent the largest percentage of their caseload resulting in an early education group ($n = 114$) and an elementary group ($n = 224$). We aggregated responses from each question to gain an estimate of current implementation practices associated with each intervention component queried.

Conclusions: This study provides general guidelines of current clinical practices to help guide research on grammatical interventions for children and to promote successful translation and implementations of evidence-based treatment approaches. Results may also help clinicians and researchers better understand misalignments between empirically supported intervention approaches and current approaches for treating grammatical weaknesses.

Weaknesses in language development are associated with many child disorders, including specific language impairment (SLI), autism spectrum disorder (ASD), intellectual and developmental disabilities, attention-deficit/hyperactivity disorder, traumatic brain injury, psychological/emotional disorders, and hearing loss (American Speech-Language-Hearing Association: Practice Portal). One particular area of language that is frequently compromised in these disorders is the expressive use of morphosyntax or grammar (Bedore & Leonard, 1998; Marchman, Wulfeck, & Weismer, 1999; Rice, Wexler, & Hershberger, 1998). Weaknesses in grammatical forms, including tense and agreement markers, have even been identified as potential clinical markers of English-speaking children with SLI (Rice & Wexler, 1996). Researchers have identified grammatical weaknesses similar to those found in children with SLI in other populations, including a

subset of individuals with ASD (Roberts, Rice, & Tager-Flusberg, 2004), individuals with Down syndrome (Eadie, Fey, Douglas, & Parsons, 2002), and individuals with fragile X syndrome (Sterling, Rice, & Warren, 2012). Thus, there is a critical need to have effective intervention approaches to address the grammatical weaknesses of children with language impairment.

Although researchers have conducted intervention studies to help identify efficacious approaches to target grammatical forms (e.g., Leonard, Camarata, Brown, & Camarata, 2004; Leonard, Camarata, Pawłowska, Brown, & Camarata, 2006; Plante et al., 2014; Smith-Lock, Leitao, Lambert, & Nickels, 2013), more studies are needed to improve treatment effectiveness and efficiency. Little is known regarding how speech-language pathologists (SLPs) implement these interventions. It is essential that investigators have a good understanding of current practices to inform further research focused on developing and evaluating interventions for grammatical weaknesses that are of use to clinicians and reflective of clinical practice to help ensure translation and implementation of evidence-based interventions (Finestack & Fey, 2017). It is also important to gain a better understanding of how well the current practice aligns

^aUniversity of Minnesota–Twin Cities, Minneapolis

Correspondence to Lizbeth H. Finestack: finestack@umn.edu

Editor-in-Chief: Julie Barkmeier-Kraemer

Editor: Li Sheng

Received September 28, 2017

Revision received February 17, 2018

Accepted April 11, 2018

https://doi.org/10.1044/2018_AJSLP-17-0168

Disclosure: The authors have declared that no competing interests existed at the time of publication.

with empirically supported approaches for targeting the grammatical weaknesses of children with language impairment. Therefore, the purpose of this study was to survey currently practicing SLPs about the intervention approaches that they use when targeting grammatical forms.

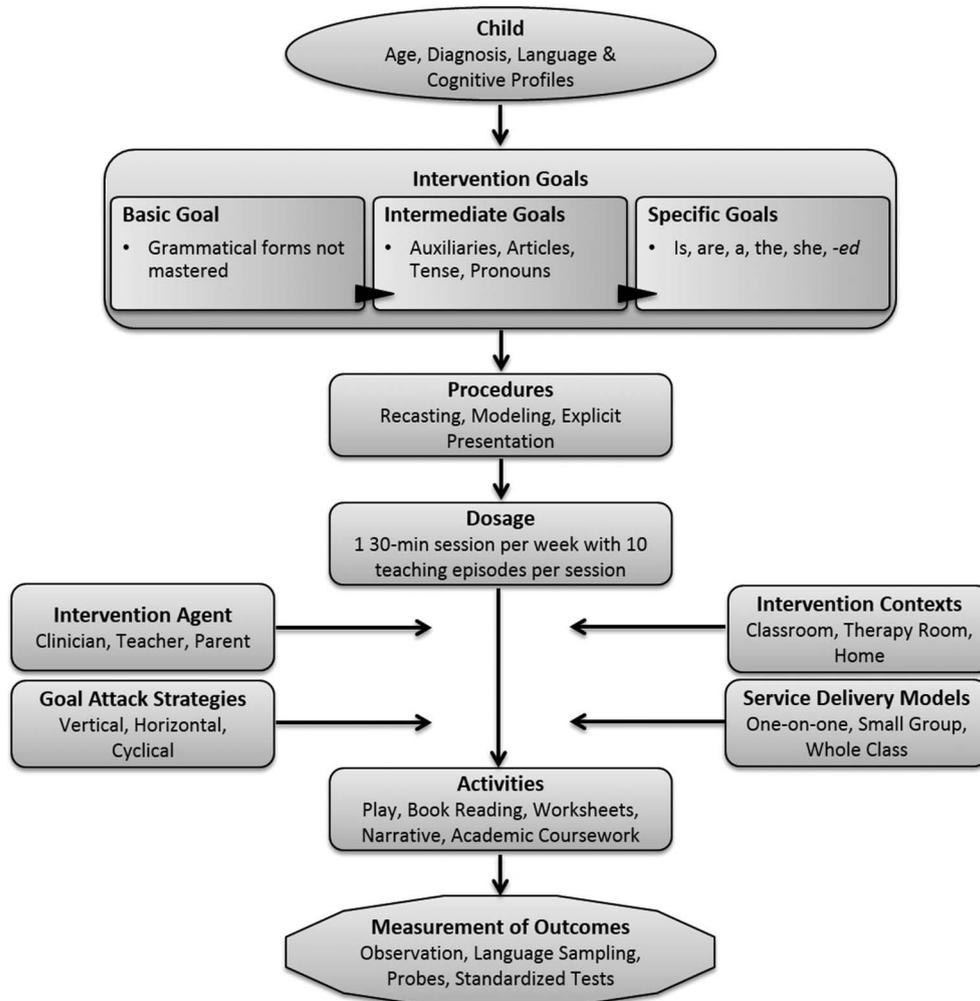
To develop our survey, we used Fey and colleagues' (Fey, 1986; Fey & Finestack, 2009; McCauley & Fey, 2006; McCauley, Fey, & Gillam, 2017) intervention framework. The framework dissects language interventions into its main components. This framework was a particularly good fit for the current study because Fey and colleagues have used the framework in previous works to describe interventions targeting grammatical forms (McCauley & Fey, 2006; McCauley et al., 2017). We were interested in gaining information about nine key intervention components related to grammatical interventions, including goals, procedures, dosage, agents, contexts, goal attack

strategies, service delivery models, activities, and outcome measurements.

Intervention Components

When implementing interventions for children targeting grammatical forms, there are many concomitant features that must be considered to build the ideal intervention. Figure 1 is an adapted model of Fey and colleagues' intervention framework (Fey, 1986; Fey & Finestack, 2009; McCauley & Fey, 2006; McCauley et al., 2017) and includes examples of each component as it may relate to a child's grammatical intervention. The intervention framework begins with the child. Factors related to the child, including age, diagnosis, and cognitive and language abilities, directly guide decisions made by a clinician regarding each intervention component for an individual client. Most directly, the child's

Figure 1. Grammar intervention framework adapted from Fey and colleagues (Fey, 1986; Fey & Finestack, 2009; McCauley & Fey, 2006; McCauley et al., 2017). Rebecca J. McCauley, Marc E. Fey, and Ronald B. Gilliam, Copyright © 2017, *Treatment of Language Disorders in Children* (Second Edition), Baltimore: Paul H. Brookes Publishing Co., Inc. Used by permission.



profile will influence the intervention goals developed by the clinician. Below, we describe the intervention components that fall under the child in the intervention framework.

Intervention Goals

Child characteristics directly influence the goals that are targeted in treatment. For example, children with SLI are more likely to omit tense and agreement grammatical markings, including third-person singular present tense *-s*, regular past tense *-ed*, copula and auxiliary forms of “be,” and auxiliary “do” (Leonard, Bortolini, Caselli, McGregor, & Sabbadini, 1992; Oetting & Horohov, 1997; Rice & Wexler, 1996; Rice et al., 1998). Children with SLI also have difficulties with other grammatical inflections, including articles, progressive *-ing*, and plural *-s* (Bishop, 1994; Oetting & Rice, 1993; Rice & Oetting, 1993; Rice & Wexler, 1996; Rice et al., 1998). There are wide ranges of forms that may serve as targets for children with SLI and for other populations of children with language impairment.

Intervention Procedures

The child characteristics and intervention goals influence the intervention procedures to be used by the intervention agent. Procedures comprise the actions performed by the intervention agent to support the child’s language development toward their specific goals (McCauley & Fey, 2006). Examples of intervention procedures include actions such as modeling, recasting, explicit instruction, and imitation (Leonard, 1998). Intervention agents are likely to use more than one procedure when working with a child.

Dosage

Treatment intensity or dosage specifies the frequency and duration of treatment sessions and the frequency that grammatical targets are addressed in each session. For example, the intensity of intervention for regular past-tense forms might be eight, 30-min sessions per month with the provision of 15 models per session. In this example, this would equate to a dosage of 120 models of the regular past-tense forms per month.

Intervention Agents

Intervention agents refer to the individuals who are providing the treatment. The agent will almost always include the clinician but may also include teachers, parents, or other caregivers.

Intervention Contexts

Intervention context refers to the location of the treatment. Examples of treatment locations include the home, therapy room, or classroom.

Goal Attack Strategies

Goal attack strategies define the sequence in which specific goals are targeted and may include vertical, horizontal, and cyclical strategies (Fey, 1986). When using a vertical strategy, the intervention agent focuses on one specific goal at a time. Once the set criterion is met for one

specific goal, the agent begins to target the next specific goal. When using a horizontal strategy, the intervention agent chooses to target multiple specific goals within a single session. Progress or lack of progress on one goal does not impact the intervention for another goal. When using a cyclical goal attack strategy, the intervention agent targets each specific goal for a predetermined period of time. Once the agent targets each goal for the set period, the agent repeats the goal cycle, regardless of the child’s progress.

Service Delivery Models

The service delivery model further describes the intervention environment in terms of the composition of the learners. Examples of service delivery models include one on one, a small group, and the whole class.

Intervention Activities

Intervention activities provide a platform on which the intervention agent implements selected intervention procedures. Activities may be highly structured (e.g., drill, worksheets, homework assignments) or closely resemble the child’s natural environment (e.g., play with toys, book reading, conversation).

Measurement of Outcomes

Measurement of outcomes refers to the use of assessments, such as informal probes, language sample analyses, standardized tests, and parent reports, to monitor progress toward intervention goals.

Together, these components help to define a child’s language intervention program. It is important for clinicians to consider each component when designing and implementing grammatical interventions for children with language impairment. The structure of the framework does not suggest that one component is more important than the other. Rather, the structure models how the components are closely intertwined and that a change in one component is likely to impact the entire intervention. Moreover, it is important to note that the level of control a clinician has over each component will vary. For example, if working in an outpatient clinic, the intervention context may be limited to one-on-one sessions in a therapy room. In contrast, the clinician is likely to have high control of the activities (e.g., books, worksheets, toys) used for the treatment platform.

Current Study

Given the large number of intervention components to consider and clinicians’ decision-making control of these components, it is impossible to accurately assume the composition of typical grammatical interventions currently being implemented by SLPs. Our review of the existing literature did not reveal any studies that have systematically surveyed clinicians about their clinical practice when treating grammatical forms. We also did not find any reports of medical or educational record documentation reviews, which could potentially provide information regarding recent practice surrounding interventions targeting grammatical

forms. Thus, in the current study, we aimed to gain a better understanding of how each component comprising current interventions targeting grammatical forms is implemented.

As researchers continue to develop and evaluate child language interventions, particularly those focused on grammatical goals, it is essential to have a strong understanding of the current practice. When developing grammatical interventions, it is important that each intervention component is feasible such that clinicians would be able to implement the newly developed intervention. For an intervention to be successfully implemented, it must not require drastic changes to current intervention infrastructures and systems (Rogers, 2003). For example, larger caseloads may lead SLPs to provide intervention in small group settings. A study examining an intervention that requires individual treatment for several hours a week may not be feasible for a SLP with a very large caseload to implement. Thus, the research finding may be of little value to the clinician.

It is also important that the efficacy and effectiveness studies conducted by researchers closely reflect the current practice, with changes limited to the dependent variables of interest. For example, a study examining the efficacy of different treatment dosages should closely reflect the current practice across as many treatment components as possible, while only varying treatment dosage. All other treatment components, including context, agent, procedures, and activities, should be as similar to the clinical practice as possible. If there are too many differences in the intervention examined in a study and current practice, the translation and generalizability of research findings are likely to be limited.

Furthermore, it is also important to better understand how current clinical practice regarding interventions targeting grammatical forms aligns with empirically supported approaches. Such information will help researchers to recognize where there are shortfalls in translations between empirically supported approaches and current practice. Researchers may use this as an opportunity to focus on the translation and implementation of their research.

Overall, we know very little regarding the grammatical intervention practices of currently practicing SLPs. The purpose of this study was to examine the procedures SLPs employ when targeting grammatical forms in intervention by surveying currently practicing clinicians. To further guide research focused on the development of interventions targeting grammatical forms, we also aimed to determine if there were any intervention features that clinicians would change if provided with unlimited resources. To address these aims, we developed an online survey that queried clinicians regarding their clinical practice for each intervention framework component (Fey, 1986; Fey & Finestack, 2009; McCauley & Fey, 2006; McCauley et al., 2017). Our specific research questions were as follows:

1. When targeting grammatical forms, how do currently practicing SLPs working in early education and

elementary school settings implement each of the following intervention components:

- (a) goals,
- (b) contexts,
- (c) service delivery models,
- (d) agents,
- (e) dosage,
- (f) procedures,
- (g) goal attack strategies,
- (h) activities, and
- (i) measurement of outcomes.

2. If resources were unlimited, would currently practicing SLPs alter intervention contexts, service delivery models, or dosages? If so, how?

Method

Recruitment

We used two strategies to recruit participants. First, research assistants generated a list of approximately 12,000 SLPs using the American Speech-Language-Hearing Association “Find a Professional” portal. We filtered results by age and state. State by state, we set the filter to include only currently practicing SLPs working with children ages 3 to 11 years. The search criteria did not yield any SLPs in Oklahoma. Second, we posted survey participation invitations on two American Speech-Language-Hearing Association community listservs: “SLP Schools” and “Special Interest Group 01.” Approximately 1,900 e-mails were returned as undeliverable; thus, we successfully sent survey invitations to approximately 10,100 SLPs.

Every 50 participants who completed the survey and consented to be in a drawing were eligible to win a \$50 gift card. Winners of the drawing were chosen using a computer-generated random number assignment.

Participants

We obtained participant consent at the beginning of the online survey. A total of 388 participants fully completed the survey. For purposes of this study, we only included participants who reported that the largest proportion of their caseload included children in early education or elementary school. Early education included respondents who indicated that the largest percentage of their caseload included children in early childhood (0–3 years) or preschool (3–5 years). This reduced the sample to 338 participants (114 early education; 224 elementary), including 11 male, 322 female (94%), and five unspecified.

Participants represented 47 states (early education: 36 states; elementary: 44 states). Almost all participants (95%) reported that the highest degree they hold is a master’s

degree. Only one participant reported having a bachelor's degree, 15 reported having a doctor of education or doctor of philosophy, and two did not specify their education level. The majority of the participants identified themselves as Caucasian and reported being in the field for more than 10 years. Participants in the early education group reported to be predominantly working in private practice and preschool settings, whereas participants in the elementary group reported working primarily in elementary schools. Participants' caseload sizes ranged from one child to greater than 76 children, with most participants in the early education group reporting caseloads of 16 to 30 children and most participants in the elementary group reporting caseloads of 16 to 60 students. Additional participant demographic information is presented in Table 1.

Survey

We created an online survey to query currently practicing speech-language pathologists regarding their intervention approaches when targeting grammatical forms. The complete survey, which included 32 questions, is included in Appendix A. The first section of the survey focused on the participants' treatment environments, including clinical

Table 1. Participant demographic information.

Characteristic	Early education (n = 114)	Elementary (n = 224)
Race		
American Indian	0%	< 1%
Asian	4%	1%
Black or African American	4%	< 1%
Hispanic/Latino	0%	< 1%
White or Caucasian	83%	88%
Other	1%	1%
Mixed	2%	5%
Unspecified	5%	3%
Years of Clinical Experience		
Less than 1 year	1%	1%
1–5 years	10%	13%
5–10 years	21%	20%
10+ years	68%	66%
Unspecified	0%	< 1%
Work setting > 50% of the time		
Early childhood/birth to 3 years of age	11%	< 1%
Preschool	27%	2%
Elementary school	2%	70%
Junior high/middle school	0%	< 1%
Private practice	32%	16%
Clinic setting	11%	6%
Medical setting	8%	< 1%
University clinic	< 1%	2%
Other	2%	< 1%
Number of children on caseload		
1–15	33%	12%
16–30	40%	24%
31–45	19%	28%
46–60	6%	27%
61–75	1%	6%
> 76	0%	3%
Unspecified	1%	< 1%

settings, caseload sizes, and ages of children served. In the second section, the survey prompted participants to answer questions based on the age group they serve that represents the largest proportion of their caseload. The questions in this section focused on the treatment of grammatical goals, including goals, procedures, dosage, agents, contexts, goal attack strategies, service delivery models, activities, and outcome measurements. For many items, the survey included definitions or specific examples of queried items. Here, we briefly describe the questions asked for each component.

Goals (Question 9)

For Question 9, respondents listed the five grammatical forms they most frequently target in intervention. This question was open-ended such that respondents could list any items they wanted. Prior to this question, we did not provide respondents with any definitions of grammatical forms so that we could better describe the clinicians' perception of grammatical forms.

Dosage (Questions 10–14)

Respondents reported on treatment dosage across several questions. In the first question in this series, we provided respondents with examples of grammatical targets, including BE auxiliaries *is, are, was*; past tense *-ed*; third-person singular *-s*; pronouns *I, she, they*; and conjunctions *and, or, but*. The first question in this series (Question 10) asked about the overall percentage of time focused on grammatical targets. Question 11 asked respondents to indicate the number of teaching opportunities a child has within a session targeting grammatical forms (i.e., 0–5, 6–10, 11–20, 21–50, greater than 50). Question 12 asked clinicians to indicate the length in minutes of a typical session targeting grammatical development. Question 13 asked clinicians to report the approximate number of sessions in a month that they target grammatical forms. Finally, Question 14 asked clinicians to indicate if resources were unlimited, their ideal dosage for treating grammatical forms in terms of percentage of session, length of session, number of teaching opportunities, and sessions per month.

Contexts and Service Delivery Models (Questions 15 and 16)

For Question 15, respondents indicated the proportion of their caseload that they serve at home, in the therapy room, and in the classroom. Each of these contexts were broken down to indicate whether the service delivery model was one-on-one, small group, or the whole classroom. Question 16 asked respondents to indicate the percent of time a child on their caseload would ideally spend in each of the contexts and the ideal service delivery model, if resources were unlimited.

Goal Attack Strategies (Question 17)

Question 17 asked clinicians to indicate the goal attack strategies that they use most often. Clinicians could select more than one strategy, including horizontal, vertical, and

cyclical. The survey included definitions and examples of each attack strategy.

Procedure (Question 18)

Question 18 asked participants to indicate the frequency (i.e., never, sometimes, frequently) of each procedure they typically use (> 25% of the time) when targeting grammatical forms. Procedure options included models, recasts, requests for imitation, and explicit presentations of the pattern guiding the target form. Clinicians could also specify other procedures.

Activities (Question 19)

Question 19 asked participants to indicate the frequency (i.e., never, sometimes, frequently) of the activities that they typically use (> 25% of the time) to target grammatical forms. Activities listed included drill, play with toys, conversation, worksheets, book reading, narrative development and production, academic coursework, and writing. Clinicians could also specify other activities not listed.

Agents (Question 20)

Question 20 asked clinicians the frequency (i.e., never, sometimes, frequently) in which they typically (> 25% of the time) directly coach parents, teachers, or other service providers to use strategies to support grammatical development.

Measurement of Outcomes (Questions 21–23)

Question 21 asked clinicians to indicate the frequency (i.e., never, sometimes, frequently) they typically use (> 25% of the time) specified tools to monitor progress on grammatical goals. Tools listed included observation, informal language sample, language sample analysis (e.g., mean length of utterance [MLU]), informal probes, standardized test, parent report, and teacher report. If clinicians indicated that they used language samples sometimes or frequently, they were prompted to indicate the three analyses that they use most often to monitor progress. The survey included the following options: Computerized Language Analysis (MacWhinney, 2000), Developmental Sentence Scoring (Lee & Canter, 1971), Index of Productive Syntax (Scarborough, 1990), Language Assessment Remediation and Screening Procedure (Fletcher & Garman, 1988), MLU, and type–token ratio (TTR). Participants could also specify “other.” In addition, if clinicians indicated that they used standardized assessments sometimes or frequently to monitor progress, they were asked to indicate the three assessments that they used most often. Clinicians were provided a list of 26 assessments and could also specify other assessments. See Appendix B for a complete list of the assessments and their references.

The final section included questions regarding demographic characteristics, such as participant gender, race, years of employment, and level of education. Participants required an average of 23 min to complete the survey. An institutional review board at the University of Minnesota approved the survey and study protocol.

Coding

In the second section of the survey, participants inserted five grammatical goals that they typically target in their grammatical interventions. We categorized each response according to the general grammatical category it represented (e.g., plural *-s*, questions, adjectives). Many participants reported general areas of focus, such as “verbs”; therefore, we included a general “verb” category. In addition, many clinicians indicated goals such as increasing MLU, simple sentence formation (S + V + O), and complex sentences. We coded these responses and other responses that focused on increasing the length and/or complexity of utterances as “expanding utterances.” We coded other nonspecific targets and responses that did not fit into any of the identified categories as “other” (e.g., synonyms, interjections, categorizing). Table 2 contains a complete list of coded categories.

The second author coded the grammatical category of all participant responses. A SLP unfamiliar with the survey coded 20% of participant responses selected at random for reliability purposes. Interrater reliability (# agreements/# agreements + disagreements) was 91% for the early education group and 92% for the elementary group.

Results

Results are organized according to the intervention framework components. For each component, we report the early education ($n = 114$) and elementary ($n = 224$) groups’ responses regarding the current practice. To streamline the presentation of our findings, unless otherwise specified, we describe the responses most frequently provided by the participants. Within the dosage and context and

Table 2. Percent of participants reporting targeting intervention grammatical forms.

Target	Early education ($n = 114$)	Elementary ($n = 224$)
Adjectives	5%	14%
Articles “a,” “an,” “the”	11%	6%
Auxiliary verbs	15%	12%
Copula “be”	18%	15%
Expanding utterances	25%	43%
Negatives	6%	3%
Nouns	5%	8%
Plural <i>-s</i>	56%	50%
Possessive <i>-s</i>	28%	12%
Prepositions	21%	15%
Present progressive verbs	55%	35%
Pronouns	38%	51%
Questions	15%	15%
Regular and irregular past tense	40%	60%
Regular and irregular third person	3%	6%
Syntax (nonspecific)	4%	6%
Verbs (nonspecific)	17%	29%
Other	24%	26%

Note. Bold-faced values indicate the targets with the greatest number of participant responses.

sections, we report the participants' ideal dosages and contexts and compare current contexts and dosages to the ideal. We report the mean change by averaging the difference between current and ideal values for each participant. We begin with a description of the clinicians' caseloads for each group.

Caseload Characteristics

First, we analyzed the percentage of children on the clinicians' caseloads for which they target the expressive use of grammatical forms. To address this question, we only included participants in each age group who indicated a value greater than 0% for the percentage of their caseload in the corresponding age group. In the early education group, 71 respondents indicated that they service early childhood children (ages 0–3 years). These participants reported that, on average, for 27.52% ($SD = 34.75$) of their caseload in this age range, they target expressive use of grammatical forms. In the early education group, 105 respondents indicated that they service preschool children (ages 3–5 years). These participants reported that, on average, for 61.47% ($SD = 32.26$) of their caseload in this age range, they target expressive use of grammatical forms. In the elementary group, respondents reported that, on average, for 48.18% ($SD = 27.33$) of their caseload, they target expressive use of grammatical forms.

Next, we examined the diagnostic profiles of the respondents' caseloads. Participants reported the percentages of children on their caseload with SLI/primary language impairment, ASD, developmental disability, and other diagnoses that had at least one grammatical goal. Results for both groups are presented in Figure 2. In the early education group, 37% of the respondents reported that children

with SLI comprise at least 50% of their caseload. In the elementary group, 46% of the respondents reported that children with SLI comprise at least 50% of their caseload.

Intervention Goals

Participants provided five grammatical goals or targets they frequently focus on during grammar intervention. The results are presented in Table 2. For the early education group, the five most common grammatical targets reported were plural *-s* (56%), present progressive verbs (55%), regular and irregular past-tense verbs (40%), pronouns (38%), and possessive *-s* (28%). For the elementary group, the five most common targets were regular and irregular past tense (60%), pronouns (51%), plural *-s* (50%), expanding utterances (43%), and present progressive verbs (35%). The most commonly targeted grammatical forms reported were the same across the groups with one exception: targeting possessive *-s* was more frequently reported by the early education groups rather than expanding utterances, which was reported by the elementary group. In the early education group, 28% of participants reported possessive *-s* as a target, and 25% reported expanding utterances, which includes increasing MLU, simple sentence formation, and complex sentences, as a target.

Dosage

Participants reported the average number of teaching opportunities per session, session length, and number of sessions per month focused on grammatical targets. Results are presented in Table 3. In the early education group, 45% of participants indicated that children receive more

Figure 2. Caseload diagnoses. SLI = specific language impairment; ASD = autism spectrum disorder; DD = developmental disability.

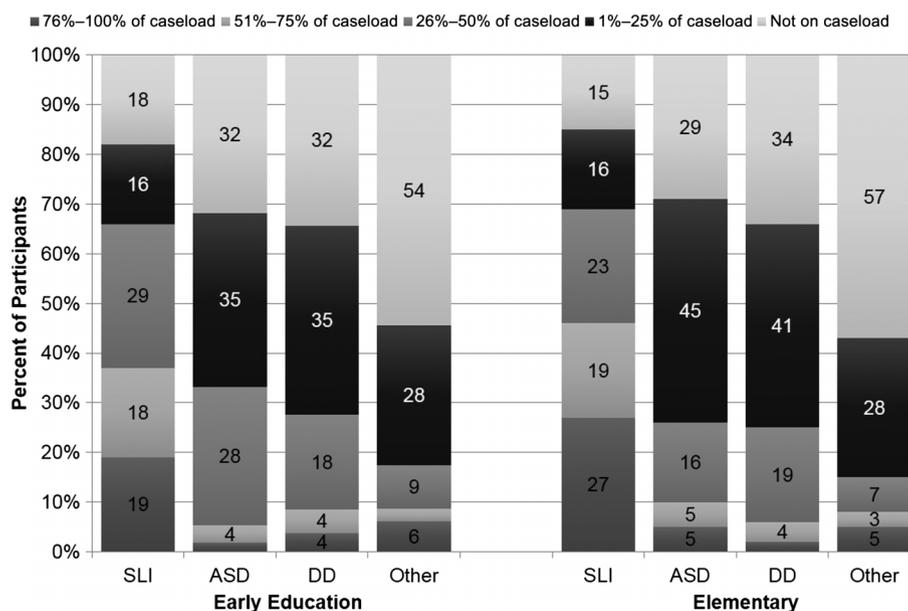


Table 3. Current, ideal, and desired differences in intervention dosages.

Intensity	Early education (n = 114)				Elementary (n = 224)			
	Current	Ideal	Difference		Current	Ideal	Difference	
			Decrease	Increase			Decrease	Increase
Opportunities/session								
% Respondents								
M		39.4				41.29		
SD		25.69				25.53		
% Respondents								
0–10	21%	12%			24%	6%		
11–20	33%	14%			37%	18%		
> 21	45%	66%			28%	70%		
Session length (min)								
% Respondents			10%	26%			10%	25%
M	29.3	37.56	–20.64	24.03	29.04	32.72	–14.13	15.67
SD	14.08	16.75	19.12	14.64	9.33	11.54	9.00	9.96
% Respondents (n)								
1–20	32%	12%			23%	14%		
21–40	46%	28%			64%	44%		
> 40	22%	31%			12%	21%		
Sessions per month								
% Respondents			6%	61%			9%	74%
M	7.71	8.52	31.00	4.27	6.29	8.84	20.00	4.44
SD	12.14	5.28	29.42	2.45	8.35	4.80	30.24	3.10
% Respondents								
0–2	5%	< 1%			8%	< 1%		
3–4	53%	22%			50%	13%		
5–6	12%	6%			13%	11%		
7–8	18%	38%			19%	39%		
> 8	11%	30%			8%	30%		

than 21 teaching opportunities per session, 46% indicated that sessions are 21 to 40 min in length, and 53% reported that sessions typically occur three to four times per month. In the elementary group, 37% of participants indicated that children receive 11–20 teaching opportunities per session, 64% of participants indicated that sessions are 21 to 40 min in length, and 50% reported that sessions typically occur three to four times per month.

Participants also reported the ideal treatment intensity they would implement if resources were unlimited. These results are also presented in Table 3. In the early education group, clinicians desired to have on average 39 teaching opportunities per session. Approximately 26% of participants indicated that they would increase the session length by an average of 24 min. Approximately 61% of participants indicated that, ideally, the number of sessions per month would increase by an average of four sessions.

In the elementary group, clinicians desired to have, on average, approximately 41 teaching opportunities per session. Approximately 25% of participants reported that, ideally, session lengths would increase by an average of 16 min. In addition, 74% of participants reported that the ideal number of sessions per month would increase in comparison to the current practice by an average of four sessions per month.

Intervention Contexts and Service Delivery Models

Table 4 displays the means and standard deviations for the percentage of time clinicians reported working in

each setting when treating grammatical goals. For the early education group, 75% of participants reported that they service children individually in the therapy room, and 37% reported using individual therapy at home. Respondents indicated that, on average, they spend 55.39% of their time servicing their caseload individually in the therapy room and that they spend 19.17% of their time servicing their caseload individually at home.

For the elementary group, 71% of participants reported providing intervention in small groups in the therapy room, and 64% reported providing services individually in the therapy room (64%). Respondents indicated that, on average, they spend 48.60% of their time servicing their caseload in small groups in the therapy room and that they spend 32.68% of their time servicing their caseload individually in the therapy room.

Participants also reported, if resources were unlimited, the ideal percentage of time children would spend in each treatment context. For the early education group, 46% of participants indicated that their desired change was a decrease in time spent individually in the therapy room. These participants desired an average decrease of 37.92% of individual treatment time in the therapy room. Of the participants, 35% reported that their desired change was an increase in individual therapy at home. These participants desired an average increase of 33.00% of time spent in individual therapy in the home.

Table 4. Mean percent of time clinicians reported working in each setting when treating grammatical goals.

Intervention context/ service delivery model	Early education (n = 114)				Elementary (n = 224)			
	Current	Ideal	Difference		Current	Ideal	Difference	
			Decrease	Increase			Decrease	Increase
Individual at home								
% Respondents	37%	58%	8%	35%	17%	40%	14%	32%
M	19.17	28.17	-32.59	33.00	4.95	9.76	-22.5	18.35
SD	34.80	33.22	30.89	17.31	16.34	16.72	24.64	11.27
Individual in therapy room								
% Respondents	75%	75%	46%	8%	64%	76%	31%	39%
M	55.39	40.39	-37.92	26.17	32.68	36.25	-31.09	33.81
SD	42.23	34.95	23.76	22.25	37.44	30.66	21.71	21.65
Small group in therapy room								
% Respondents	21%	33%	14%	18%	71%	65%	58%	12%
M	9.17	8.99	-27.19	19.75	48.60	22.73	49.45	22.42
SD	21.22	15.75	25.69	10.96	39.66	24.13	24.92	19.48
Individual in classroom								
% Respondents	14%	22%	7%	12%	12%	26%	6%	21%
M	3.77	5.37	-16.88	22.62	1.73	5.94	-12.31	23.00
SD	11.51	12.59	9.61	12.45	5.53	13.90	6.65	18.99
Small group in classroom								
% Respondents	16%	33%	4%	22%	25%	48%	7%	43%
M	5.75	8.87	-26.00	19.47	4.97	13.74	-20.50	23.86
SD	15.36	15.41	8.22	12.08	10.97	18.27	19.04	16.25
Whole class instruction								
% Respondents	11%	23%	7%	14%	18%	36%	8%	27%
M	3.07	5.01	-18.13	22.85	4.83	9.16	-23.78	23.28
SD	10.10	12.17	5.94	17.61	14.78	17.11	16.55	18.48
Other								
% Respondents (n)	8%	11%	3%	4%	5%	6%	3%	4%
M	3.68	3.20	-48.33	18.00	2.23	2.43	-36.67	29.28
SD	15.99	12.16	30.55	7.58	12.71	12.36	33.86	27.74

Note. The difference indicates the number of clinicians who indicated they wanted a decrease or increase in time spent in the setting and the average difference between their current and ideal percentages.

For the elementary group, 58% of participants reported that their desired change was a decrease in time spent in small groups in the therapy room. These participants desired an average decrease of 49.45% of time spent in small groups in the therapy room. In addition, 43% of participants reported that their desired change was an increase in small groups in the classroom. These participants desired an average increase of 23.86% of time spent in a small group in the classroom.

Goal Attack Strategies

Participants identified the goal attack strategies they typically use to treat grammatical forms (i.e., cyclical, vertical, or horizontal). In the early education group, 24% of participants reported using a cyclical approach, 24% reported using a horizontal approach, and 15% reported using a vertical approach. The use of a combination of approaches was reported by 33% of participants. In the elementary group, 30% of participants reported using a horizontal approach, 23% reported using a cyclical approach, and 11% reported using a vertical approach. The use of a combination of approaches was reported by 34% of participants.

Intervention Procedures

Participants ranked the frequency that, when targeting grammatical forms, they use models, recasts, requests for imitation, and explicit presentations of the pattern guiding the target form. Results are presented in Table 5. In the early education group, 98% of participants reported that they frequently use modeling, 74% reported that they frequently use recasts, 73% reported that they frequently use requests for imitation, and 64% reported that they frequently use explicit presentations. In the elementary group, 9% of participants reported that they frequently use modeling, 69% reported that they frequently use explicit presentations, 65% reported that they frequently use recasts, and 61% reported that they frequently use requests for imitation.

Intervention Activities

Participants ranked the frequency that, when targeting grammatical forms, they use the following intervention activities: drill, play with toys, conversation, worksheets, book reading, narratives, academic coursework, and writing.

Table 5. Frequency ratings of intervention procedures, activities, and agents.

Intervention component	Early education (<i>n</i> = 114)			Elementary (<i>n</i> = 224)		
	Never	Sometimes	Frequently	Never	Sometimes	Frequently
Procedures						
Models	0%	2%	98%	0%	9%	90%
Recasts	2%	21%	74%	3%	27%	65%
Requests for imitation	0%	25%	73%	2%	34%	61%
Explicit presentations	4%	31%	64%	1%	27%	69%
Other	< 1%	< 1%	6%	< 1%	2%	5%
Activities						
Drill	15%	46%	37%	9%	41%	50%
Play with toys	0%	19%	81%	13%	48%	35%
Conversation	< 1%	23%	77%	1%	32%	67%
Worksheets	50%	39%	2%	27%	54%	16%
Book reading	2%	42%	54%	6%	50%	42%
Narrative development	19%	41%	33%	12%	42%	42%
Academic coursework	66%	25%	3%	22%	60%	13%
Writing	72%	21%	< 1%	27%	56%	15%
Other	3%	2%	< 3%	1%	< 1%	3%
Agents						
Parent	1%	23%	75%	11%	54%	34%
Teacher	31%	36%	29%	14%	63%	21%
Other caregiver	15%	50%	22%	17%	50%	19%

Results are presented in Table 5. In the early education group, 81% of participants reported frequently using play with toys, 77% reported frequently using conversation, and 54% reported frequently using book reading. In the elementary group, 67% of participants reported frequently using conversation, 50% reported frequently using drill, 42% reported frequently using book reading, and another 42% reported frequently using narrative development.

Intervention Agents

Participants rated the frequency they directly coach parents, teachers, and other caregivers as part of their grammatical interventions. Results are presented in Table 5. In the early education group, 75% of participants reported frequently coaching parents to support their child's language development, 29% reported frequently coaching teachers, and 22% reported coaching other caregivers. In the elementary group, 34% of participants reported frequently coaching parents, 21% reported frequently coaching teachers, and 19% reported frequently coaching other caregivers.

Measurement of Outcomes

Participants ranked the frequency that they use specified assessment tools to monitor progress on grammatical goals. Figure 3 displays the results for both the early education and elementary groups. For the early education group, 83% of participants reported frequently using observation, 64% reported frequently using language sampling, and 57% reported frequently using informal probes. For the elementary group, 66% of participants reported frequently

using observation, 64% reported frequently using informal probes, and 53% reported frequently using informal language sampling.

Participants who reported that they sometimes or frequently use language sample analyses to monitor progress identified up to three language sample analyses that they use most often. Results for both the early education group (*n* = 92) and elementary group (*n* = 162) are presented in Figure 4. MLU was reported to be used by 94% of participants in the early education group and 86% of participants in the elementary group. TTR was reported to be used by 25% of participants in the early education group and 33% of participants in the elementary group. Other analyses were reported to be used by less than 15% of participants across both groups.

In addition, participants who reported that they sometimes or frequently use standardized assessments to monitor progress identified up to three standardized assessments that they use most often. Results for both the early education group (*n* = 89) and elementary group (*n* = 84) are presented in Table 6. In the early education group, the three most commonly reported assessments used were the Preschool Language Scales (87%; Zimmerman, Steiner, & Pond, 2002), Comprehensive Evaluation of Language Fundamentals (71%; Wiig, Semel, & Secord, 2013), and Structured Photographic Expressive Language Test (22%; Dawson, Stout, & Eyer, 2003). In the elementary group, the three most commonly reported assessments were the Comprehensive Evaluation of Language Fundamentals (82%; Carrow-Woolfolk, 2017), Comprehensive Assessment of Spoken Language (42%), and Preschool Language Scales (42%).

Figure 3. Participants' frequency ratings of assessment tools used to monitor progress. Elem. = elementary.

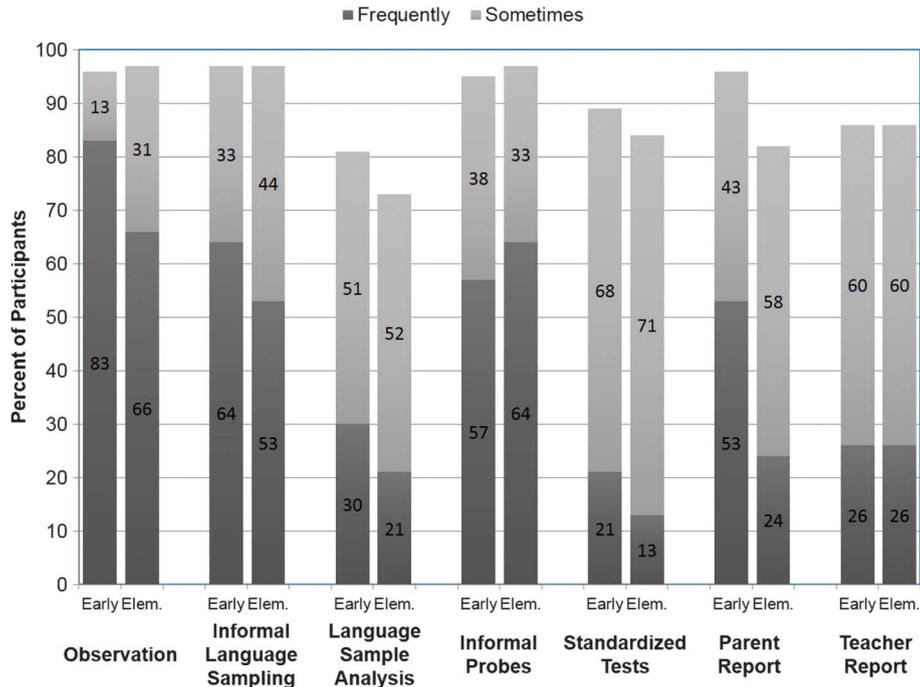


Figure 4. Language sample analyses reported to be used most frequently to monitor progress. CLAN = computerized language analysis; DSS = developmental sentence scoring; IPSyn = index of productive syntax; LARSP = language assessment remediation and screening procedure; MLU = mean length of utterance; TTR = type-token ratio; Elem. = elementary.

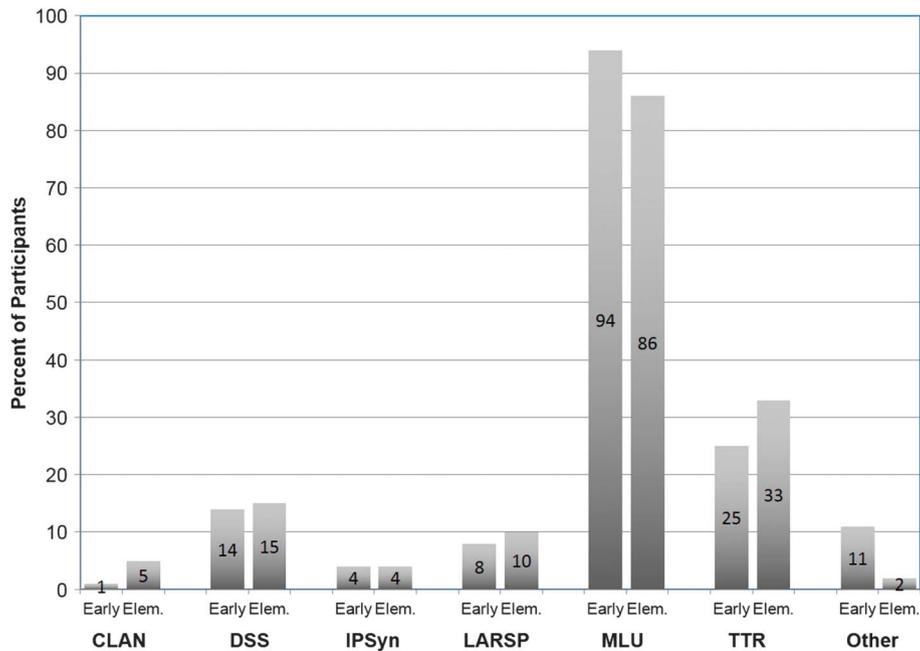


Table 6. Use of standardized assessments by participants.

Standardized assessment	Early education (<i>n</i> = 89)	Elementary (<i>n</i> = 84)
BLT	< 1%	0%
BDI	< 1%	1%
CELI	0%	0%
CCC	2%	1%
CELF	71%	82%
CASL	13%	42%
DELV	< 1%	2%
ITPA	0%	0%
MILI	0%	0%
NSST	0%	0%
OWLS	12%	28%
PLAI	< 1%	0%
PLS	87%	42%
REELS	19%	3%
Renfrew Bus Story	2%	< 1%
TEGI	0%	0%
SICD	< 1%	1%
SPELT	22%	13%
TACL	20%	10%
TEEM	0%	4%
TROG	0%	0%
TOAL	0%	2%
TELD	5%	2%
TOLD	13%	27%
UTLD	0%	0%
WLPB	0%	< 1%
Other	8%	9%

Note. Bold-faced values indicate the assessments most frequently used by participants. BLT = Bankson Language Test; BDI = Battelle Development Inventory; CELI = Carrow Elicited Language Inventory; CCC = Children's Communication Checklist; CELF = Clinical Evaluation of Language Fundamentals; CASL = Comprehensive Assessment of Spoken Language; DELV = Diagnostic Evaluation of Language Variation; ITPA = Illinois Test of Psycholinguistic Abilities; MILI = Multilevel Informal Language Inventory; NSST = Northwestern Syntax Screening Test; OWLS = Oral and Written Language Scales; PLAI = Preschool Language Assessment Instrument; PLS = Preschool Language Scale; REELS = Receptive/Expressive Emergent Language Scale; TEGI = Rice/Wexler Test of Early Grammatical Impairment; SICD = Sequenced Inventory of Communication Development; SPELT = Structured Photographic Expressive Language Test; TACL = Test for Auditory Comprehension of Language; TEEM = Test for Examining Expressive Morphology; TROG = Test for the Reception of Grammar; TOAL = Test of Adolescent and Adult Language; TELD = Test of Early Language Development; TOLD = Test of Language Development; UTLD = Utah Test of Language Development; WLPB = Woodcock Language Proficiency Battery. See Appendix B for complete references.

Discussion

The primary aim of this study was to determine how currently practicing SLPs implement grammatical interventions for children with language impairment. We examined the implementation of each component included in the intervention framework developed by Fey and colleagues (Fey, 1986; Fey & Finestack, 2009; McCauley & Fey, 2006; McCauley et al., 2017). The secondary study aim was to determine if and how currently practicing SLPs would alter grammatical intervention if resources

were unlimited. Specifically, we asked about changes in intervention contexts and dosages. To address these aims, we created an online survey for currently practicing speech-language pathologists to complete. We reported study results for two groups of clinicians: those whose largest proportion of their caseload comprised children in early education (i.e., birth through preschool) and those whose largest proportion of their caseload comprised children of elementary school age.

Both groups of participants indicated that they target grammatical forms for substantial proportions of their caseload. Respondents serving preschoolers, aged 3 to 5 years, indicated that they target grammatical forms with approximately 62% of their caseload. Respondents serving children of elementary school age reported that they target grammatical forms with approximately 48% of their caseload. Respondents serving children birth to 3 years of age indicated that they target grammatical weaknesses with a relatively smaller proportion of their caseload. These respondents reported that they work on grammatical forms with approximately 28% of their caseload. This is not surprising given that a large percentage of their caseload is likely to be in the prelinguistic or single-word stage of language development. It is clear that clinicians frequently target grammatical forms when working with preschoolers and elementary school-age children. For both the early education and elementary groups, on average, children with SLI represented the largest proportion of their caseload. Moreover, the grammatical targets that the greatest proportion of respondents indicated that they target in intervention across both groups included plural *-s*, possessive *-s*, present progressive verbs, pronouns, regular and irregular past tense, and expanding utterances. These findings align well with the well-documented grammatical weaknesses of children with SLI (Bedore & Leonard, 1998; Marchman et al., 1999; Rice et al., 1998).

The dosages reported by participants in the early education group, for current practice, suggest that most children receive at least 11 teaching opportunities per session, and many receive more than 20 opportunities per session. Sessions are an average of 29 min in length and occur approximately eight times per month. The dosages for the elementary group indicate that, on average, children receive 11 to 20 teaching opportunities per session. On average, clinicians reported that sessions are 29 min in length and occur six times per month. The majority of clinicians in both the early education and elementary groups (78% and 65%, respectively) responded that they provide more than 11 opportunities per session. Moreover, in both groups, more than 90% of the respondents indicated that, ideally, they would provide approximately 40 opportunities per session. In ideal conditions, this would correspond to approximately 1.05 to 1.26 opportunities per minute. Such a rate is consistent with the research work that suggests that, when using recasts, a rate of 0.8–1.0 recasts/min may be most efficacious (Camarata, Nelson, & Camarata, 1994; Fey, Krulik, Loeb, & Proctor-Williams, 1999). Little evidence

exists offering empirically supported levels of intensity in terms of session length and frequency. Future research work addressing these intervention components should consider the levels reported by clinicians in this study to guide study design.

When asked about intervention contexts and service delivery models used when targeting grammatical forms, 75% of participants in the early education group indicated that they spend more than half of their time providing services individually in the therapy room. In the elementary group, most participants also reported providing services in the therapy room, either individually or in small groups. To date, empirical evidence does not clearly support a single context or model when specifically targeting grammatical forms. A systematic review examining the effects of different service delivery models on communication outcomes for elementary school-age children conducted by Cirrin et al. (2010) was inconclusive. The review yielded three studies with language and literacy outcomes, none of which provided strong evidence of support for one delivery model over another. Thus, further research is needed to better understand how intervention outcomes may be impacted by the intervention setting. Given that both the early education and elementary groups reported that they desired a decrease in the amount of time serviced in the therapy room and preferred to increase treatment time in the classroom, more examinations comparing grammatical language outcomes when treatment is delivered in the therapy room and classroom are warranted. Such studies are particularly in need given that most treatment studies deliver intervention one-on-one in a therapy room.

There was relatively little consistency in the goal attack strategies that both groups reported using when treating grammatical forms. Most participants reported using a combination of goal attack strategies. Very few studies have investigated this component of the intervention framework as it applied to grammatical interventions; however, in a study of 47 preschoolers, Tyler, Lewis, Haskill, and Tolbert (2003) did find that an approach that alternated grammatical goals with phonological goals and the specific grammatical goals targeted yielded greater gains on grammar measures than the comparison attack strategies (vertical or horizontal). This is another area pertaining to interventions targeting grammatical forms where more research is needed to provide clinicians with empirically supported strategies.

The intervention procedures that the participants in the early education group reported primarily using consisted of modeling, recasting, and requesting imitation. Participants in the elementary group also reported frequently using these procedures. This is not surprising, given that generally, research indicates that these types of procedures are effective for improving the grammatical skill of preschool- and early elementary school-age children with SLI (see Ebbels, 2014). Large proportions of participants in both the early education and elementary groups indicated that they also use explicit presentations of grammatical patterns (64% and 69%, respectively). A piece of evidence is beginning to emerge supporting the use of explicit instruction

for early elementary school-age children (Ebbels, 2014; Finestack & Fey, 2009; Motsch & Riehemann, 2008). In addition, an explicit instruction is recommended when targeting grammatical forms (see Eisenberg, 2013) and sentence complexity of school-age children (see Balthazar & Scott, 2015, 2017). However, there is no research to date that clearly indicates that explicit presentations are more effective than other implicit intervention approaches. This finding supports further research in this area.

Participants in both groups reported using a variety of activities to support their intervention. There is no evidence to suggest that one activity should always or never be used. Instead, activities are commonly individualized based on the child and setting. Further research is needed to better understand the impact of the intervention activity on long-term outcomes associated with grammatical language and other language skills.

In the early education group, 75% of clinicians reported coaching parents to support grammatical language development. There is a strong empirical base supporting the use of parents as intervention agents, particularly for young children (Fey, Cleave, Long, & Hughes, 1993; Girolametto, Pearce, & Weitzman, 1996). However, for elementary school-age children, very little is known regarding the impact of coaching caregivers and teachers. More research is needed in this area to determine not only if such coaching is effective, but also if it is efficient in terms of time and money.

Participants in both the early education and elementary groups reported frequently using observation and language samples to monitor progress on grammatical goals. This is consistent with best clinical practices. In contrast to standardized assessments (Plante, 1996), language samples provide information regarding how the child uses language in situations that more closely resemble real life (Costanza-Smith, 2010). Language samples also allow clinicians to evaluate language on multiple dimensions (Miller, 1981). Moreover, unlike standardized tests and other probes, language samples may be administered repeatedly within a short time frame. It was surprising that more than 25% of the clinicians who indicated they use language samples to monitor progress reported to often use the TTR as an outcome measure. The TTR is generally considered a measure of semantics or vocabulary and has been found to be insensitive to change across time (Watkins, Kelly, Harbers, & Hollis, 1995). Thus, the use of the TTR to monitor progress on grammatical targets goes against evidence-based practice. This may suggest that clinicians are in need of more sensitive measures to monitor progress and that more research is needed to focus on outcome measures.

Although we did not aim to directly compare grammatical interventions across age groups, our findings suggest that, generally, interventions are similar between groups. Most of the differences are consistent with expectations associated with development. For example, it is developmentally appropriate for expanding utterances to be a common target for elementary school-age children and

less common for preschoolers. Similarly, it was not unexpected that more clinicians in the early education group reported providing services in the home than did clinicians in the elementary group (37% vs. 17%).

It is important to note that the survey provides a broad overview of intervention practices focused on grammatical skills of clinicians serving two large groups of students: early education and elementary. Clinicians indicated that the largest portion of their caseloads comprised children with SLI. Thus, survey results are most generalizable to interventions for children with SLI or primary language impairment. Moreover, on the survey, clinicians self-reported the five grammatical forms that they most frequently target in therapy. Most commonly, clinicians indicated that they most frequently targeted early developing grammatical forms. Few clinicians reported commonly targeting complex syntactic forms. Thus, the survey results should be interpreted in relation to targeting simple grammatical forms. It is also important to note that some clinicians listed goals, such as adjectives and nouns, that may not traditionally be considered to be grammatical goals, although the percentage of clinicians reporting these targets was relatively low (5% to 14%). In addition, when clinicians listed verbs without any other specification (17% to 29%), it is not clear whether the target was to increase verb vocabulary or improve grammatical forms associated with verbs. Thus, ambiguity in clinicians' interpretations of grammatical targets may limit the generalizability of the study results.

Implications

Information gained through the survey will help guide researchers conducting intervention studies in at least three important ways. First, this study provides researchers with general guidelines of the current practice. Thus, if researchers want to examine components that are currently being implemented in intervention, this information is known. Moreover, it will be important for researchers to examine elements of the current practice for which there is little empirical evidence to ensure the usefulness of the selected approach. For example, in both groups, approximately 60% of clinicians indicated that they frequently use explicit presentation of the pattern guiding the target form. As noted above, limited research exists supporting the use of explicit approaches over implicit approaches. Thus, examining the use of explicit presentations compared with other intervention procedures may be a fruitful area of research for investigators of child grammatical interventions.

Second, based on participants' reports of how they would change service delivery and intensity if resources were unlimited, researchers can examine the efficacy and effectiveness of intervention approaches directly guided by the preferences and judgments of clinicians. For example, given that many clinicians in the elementary group reported that they desire a decrease in the use of small groups in the therapy room and would prefer increased use of classroom instruction (individual, small group, and whole class), the efficacy of these contexts should be empirically

evaluated. Depending on the results of such an evaluation, clinicians would have evidence to support no change or to advocate for such clinician-desired changes in intervention contexts.

Third, knowledge of the current practice allows researchers to develop and examine interventions that do not require radical changes in practice and resources. This will help ensure translation and implementation feasibility of new intervention approaches. To build off of the aforementioned example, in a study of service delivery models including small groups in the classroom for elementary students, researchers would want the other intervention components to reflect the current practice as much as possible. For example, it would be prudent to have the intervention use models, recasts, and/or explicit presentations, embed teaching opportunities in conversation, and employ a horizontal or combined goal attack strategy. Thus, if a piece of evidence emerges that classroom small groups are more beneficial than other service delivery models, when all other intervention components are similar to the current practice, the study results will be easily generalizable. In addition, because clinicians are more likely to adopt an alternative intervention approach that is compatible to their existing approach (Rogers, 2003), there is a greater likelihood that clinicians will implement changes to reflect the approach included in the study.

Limitations

The use of an electronic survey allowed us to better understand the current practice regarding grammatical interventions of a large group of individuals, on a national level. However, a self-reporting survey methodology allows for bias and inaccuracy of a clinician's own clinical behavior. Depending on clinicians' values and viewpoints, they may overreport or underreport use of intervention components. Clinician interviews, review of treatment notes, or direct observation of practicing SLPs would allow for more accurate depictions of how clinicians are currently implementing grammar intervention components. A benefit to the use of alternative methodology is that the relationships between child factors (e.g., age, diagnosis, impairment severity) and treatment decisions can be more directly evaluated. Moreover, the use of one-on-one interviews would allow researchers to ask questions regarding how and why SLPs make intervention decisions and gain a more complete understanding of clinical processes.

It is also likely that the clinicians who service children throughout the country differently interpreted some of the questions and terminology used in the survey. For example, diagnostic criteria and labels for children with SLI vary widely across states. Thus, we do not know for certain how differing interpretations by clinicians may have impacted the study results.

Although we had more than 100 respondents in each group, the study's sample size is relatively small. Not all states were represented in the sample, and some states had

only a few clinician respondents. Thus, the generalizability of the study results may be limited. Future studies may consider increasing the sample size or targeting clinicians serving specific ethnic groups, socioeconomic groups, or in certain geographic regions to yield findings that are reflective of specified groups or areas.

The design of this study restricted our analyses to be strictly descriptive. The survey could have been created to allow for comparison of grammatical interventions across many possible independent variables, such as populations (e.g., ASD vs. SLI), settings (school vs. home), or age groups (e.g., preschool vs. early elementary). An alternative study design would likely yield more specific information to answer additional research questions (e.g., Do grammatical intervention approaches differ based on a child's diagnosis? Are similar outcome measures used when intervention takes place at home compared with school? How does coaching of parents differ from coaching of teachers?) to further inform research questions and clinical decisions.

Conclusions

Results from this study can be used to support the implementation of evidence-based grammatical interventions. This study provides general guidelines of the current clinical practice to help guide research on grammatical interventions for children in an effort to improve intervention outcomes. Researchers may also use study results of clinician preferences to support the examination of alternative treatment approaches. We advocate that researchers carefully consider results from this study to help identify areas in which further information regarding current clinical practice is needed and to guide the focus and design of future investigations of child language interventions.

Acknowledgments

This study was supported by an Advancing Academic-Research Careers Award from the American Speech-Language-Hearing Association awarded to Lizbeth H. Finestack.

References

- American Speech-Language-Hearing Association** (n.d.). *Spoken language disorders* (Practice Portal). Retrieved April 2, 2016 from <http://www.asha.org/PRPSpecificTopic.aspx?folderid=8589935327§ion=Overview>
- Balthazar, C. H., & Scott, C. M.** (2015). The place of syntax in school-age language assessment and intervention. In T. A. Ukrainetz (Ed.), *School-age language intervention: Evidence-based practices*. Austin, TX: Pro-Ed.
- Balthazar, C. H., & Scott, C. M.** (2017). Complex sentence intervention. In R. J. McCauley, M. E. Fey, & R. B. Gillam (Eds.), *Treatment of language disorders in children* (2nd ed.). Baltimore, MD: Brookes.
- Bedore, L. M., & Leonard, L. B.** (1998). Specific language impairment and grammatical morphology: A discriminant function analysis. *Journal of Speech, Language, and Hearing Research, 41*, 1185–1192.
- Bishop, D. V. M.** (1994). Grammatical errors in specific language impairment: Competence or performance limitations? *Applied Psycholinguistics, 15*(4), 507–550.
- Camarata, S., Nelson, K. E., & Camarata, M. N.** (1994). Comparison of conversational-recasting and imitative procedures for training grammatical structures in children with specific language impairment. *Journal of Speech and Hearing Research, 37*(6), 1414–1423.
- Carrow-Woolfolk, E.** (2017). *Comprehensive Assessment of Spoken Language—Second Edition*. Torrance, CA: Western Psychological Services.
- Cirrin, F. M., Schooling, T. L., Nelson, N. W., Diehl, S. F., Flynn, P. F., Staskowski, M., . . . Adamczyk, D. F.** (2010). Evidence-based systematic review: Effects of different service delivery models on communication outcomes for elementary school-age children. *Language, Speech, and Hearing Services in Schools, 41*(3), 233–264. [https://doi.org/10.1044/0161-1461\(2009/08-0128\)](https://doi.org/10.1044/0161-1461(2009/08-0128))
- Costanza-Smith, A.** (2010). The clinical utility of language samples. *SIG 1 Perspectives on Language Learning and Education, 17*(1), 9–15.
- Dawson, J., Stout, C., & Eyer, J.** (2003). *Structured Photographic Expressive Language Test—Third Edition*. DeKalb, IL: Janelle Publications.
- Eadie, P. A., Fey, M. E., Douglas, J. M., & Parsons, C. L.** (2002). Profiles of grammatical morphology and sentence imitation in children with specific language impairment and Down syndrome. *Journal of Speech, Language, and Hearing Research, 45*(4), 720–732.
- Ebbels, S. H.** (2014). Effectiveness of intervention for grammar in school-aged children with primary language impairments: A review of the evidence. *Child Language Teaching and Therapy, 30*(1), 7–40.
- Eisenberg, S. L.** (2013). Grammar intervention: Content and procedures for facilitating children's language development. *Topics in Language Disorders, 33*(2), 165–178.
- Fey, M. E.** (1986). *Language intervention with young children*. San Diego, CA: College-Hill Press.
- Fey, M. E., Cleave, P. L., Long, S. H., & Hughes, D. L.** (1993). Two approaches to the facilitation of grammar in children with language impairment: An experimental evaluation. *Journal of Speech and Hearing Research, 36*(1), 141–157.
- Fey, M. E., & Finestack, L. H.** (2009). Research and development in children's language intervention: A 5-phase model. In R. G. Schwartz (Ed.), *Handbook of child language disorders* (pp. 513–531). New York, NY: Psychology Press.
- Fey, M. E., Krulik, T. E., Loeb, D. F., & Proctor-Williams, K.** (1999). Sentence recast use by parents of children with typical language and children with specific language impairment. *American Journal of Speech-Language Pathology, 8*, 273–286.
- Finestack, L. H., & Fey, M. E.** (2009). Evaluation of a deductive procedure to teach grammatical inflections to children with language impairment. *American Journal of Speech-Language Pathology, 18*(3), 289–302. [https://doi.org/10.1044/1058-0360\(2009/08-0041\)](https://doi.org/10.1044/1058-0360(2009/08-0041))
- Finestack, L. H., & Fey, M. E.** (2017). Translation and implementation research in the development of evidence-based child language interventions. In R. G. Schwartz (Ed.), *Handbook of child language disorders* (2nd ed.). New York: Psychology Press.
- Fletcher, P., & Garman, M.** (1988). LARSPing by numbers [Comment/reply]. *British Journal of Disorders of Communication, 23*(3), 309–321. <https://doi.org/10.3109/13682828809011940>
- Girolametto, L., Pearce, P. S., & Weitzman, E.** (1996). Interactive focused stimulation for toddlers with expressive vocabulary delays. *Journal of Speech and Hearing Research, 39*(6), 1274–1283.

- Lee, L. L., & Canter, S. M. (1971). Developmental sentence scoring: A clinical procedure for estimating syntactic development in children's spontaneous speech. *Journal of Speech and Hearing Disorders, 36*(3), 315–340.
- Leonard, L. B. (1998). *Children with specific language impairment*. Cambridge, MA: MIT Press.
- Leonard, L. B., Bortolini, U., Caselli, M., McGregor, K. K., & Sabbadini, L. (1992). Morphological deficits in children with specific language impairment: The status of features in the underlying grammar. *Language Acquisition: A Journal of Developmental Linguistics, 2*(2), 151–179.
- Leonard, L. B., Camarata, S. M., Brown, B., & Camarata, M. N. (2004). Tense and agreement in the speech of children with specific language impairment: Patterns of generalization through intervention. *Journal of Speech, Language, and Hearing Research, 47*(6), 1363–1379.
- Leonard, L. B., Camarata, S. M., Pawłowska, M., Brown, B., & Camarata, M. N. (2006). Tense and agreement morphemes in the speech of children with specific language impairment during intervention: Phase 2. *Journal of Speech, Language, and Hearing Research, 49*, 749–770.
- MacWhinney, B. (2000). *The CHILDES project: Tools for analyzing talk* (3rd ed.). Mahwah, NJ: Erlbaum.
- Marchman, V. A., Wulfeck, B., & Weismer, S. E. (1999). Morphological productivity in children with normal language and SLIA study of the English past tense. *Journal of Speech, Language, and Hearing Research, 42*(1), 206–219.
- McCauley, R. J., & Fey, M. E. (2006). Introduction to treatment of language disorders in children. In R. J. McCauley & M. E. Fey (Eds.), *Treatment of language disorders in children*. Baltimore, MD: Brookes.
- McCauley, R. J., Fey, M. E., & Gillam, R. B. (2017). Introduction to treatment of language disorders in children (2nd ed.). In R. J. McCauley, M. E. Fey, & R. B. Gillam (Eds.), *Treatment of language disorders in children* (2nd ed.). Baltimore, MD: Brookes.
- Miller, J. (1981). *Assessing language production in children: Experimental procedures*. Boston, MA: Allyn & Bacon.
- Motsch, H.-J., & Riehemann, S. (2008). Effects of “context-optimization” on the acquisition of grammatical case in children with specific language impairment: An experimental evaluation in the classroom. *International Journal of Language & Communication Disorders, 43*(6), 683–698.
- Oetting, J. B., & Horohov, J. E. (1997). Past-tense marking by children with and without specific language impairment. *Journal of Speech, Language, and Hearing Research, 40*(1), 62–74.
- Oetting, J. B., & Rice, M. L. (1993). Plural acquisition in children with specific language impairment. *Journal of Speech and Hearing Research, 36*(6), 1236–1248.
- Plante, E. (1996). Observing and interpreting behaviors: An introduction to the clinical forum. *Language, Speech, and Hearing Services in Schools, 27*(2), 99–101.
- Plante, E., Ogilvie, T., Vance, R., Aguilar, J. M., Dailey, N. S., Meyers, C., . . . Burton, R. (2014). Variability in the language input to children enhances learning in a treatment context. *American Journal of Speech-Language Pathology, 23*, 530–545. https://doi.org/10.1044/2014_AJSLP-13-0038
- Rice, M. L., & Oetting, J. B. (1993). Morphological deficits of children with SLI: Evaluation of number marking and agreement. *Journal of Speech and Hearing Research, 36*(6), 1249–1257.
- Rice, M. L., & Wexler, K. (1996). Toward tense as a clinical marker of specific language impairment in English-speaking children. *Journal of Speech and Hearing Research, 39*(6), 1239–1257.
- Rice, M. L., Wexler, K., & Hershberger, S. (1998). Tense over time: The longitudinal course of tense acquisition in children with specific language impairment. *Journal of Speech, Language, and Hearing Research, 41*(6), 1412–1431.
- Roberts, J. A., Rice, M. L., & Tager-Flusberg, H. (2004). Tense marking in children with autism. *Applied Psycholinguistics, 25*(3), 429–448.
- Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York, NY: Free Press.
- Scarborough, H. S. (1990). Index of productive syntax. *Applied Psycholinguistics, 11*, 1–22.
- Smith-Lock, K. M., Leitao, S., Lambert, L., & Nickels, L. (2013). Effective intervention for expressive grammar in children with specific language impairment. *International Journal of Language & Communication Disorders, 48*(3), 265–282. <https://doi.org/10.1111/1460-6984.12003>
- Sterling, A. M., Rice, M. L., & Warren, S. F. (2012). Finiteness marking in boys with fragile X syndrome. *Journal of Speech, Language, and Hearing Research, 55*(6), 1704–1715. [https://doi.org/10.1044/1092-4388\(2012/10-0106\)](https://doi.org/10.1044/1092-4388(2012/10-0106))
- Tyler, A. A., Lewis, K. E., Haskill, A., & Tolbert, L. C. (2003). Outcomes of different speech and language goal attack strategies. *Journal of Speech, Language, and Hearing Research, 46*(5), 1077–1094. [https://doi.org/10.1044/1092-4388\(2003/085\)](https://doi.org/10.1044/1092-4388(2003/085))
- Watkins, R. V., Kelly, D. J., Harbers, H. M., & Hollis, W. (1995). Measuring children's lexical diversity: Differentiating typical and impaired language learners. *Journal of Speech and Hearing Research, 38*(6), 1349–1355.
- Wiig, E. H., Semel, E., & Secord, W. A. (2013). *Clinical evaluation of language fundamentals—Fifth edition*. San Antonio, TX: Pearson.
- Zimmerman, I. L., Steiner, V. G., & Pond, R. F. (2002). *Pre-school Language Scales—Fourth Edition*. San Antonio, TX: The Psychological Corporation.

Appendix A (p. 1 of 6)

Online Survey

Section 1

1. Are you currently practicing speech-language pathology and serving children 0 through 21 years of age?
- Yes
 - No

Please think about your current practices during the past year when answering the following questions.

2. What percent of your clinical time is spent in each setting? The total should equal 100%.

	% of Clinical Time
Early Childhood (Birth–3)	
Preschool/ECSE	
Elementary School	
Junior High/Middle School	
High School	
Medical Setting	
Clinic Setting (not private practice)	
Private Practice	
University Clinic	
Other - Specify:	

3. How many students are currently on your caseload?

- 1–15
- 16–30
- 31–45
- 46–60
- 61–75
- 76+

4. What age range represents the largest percentage of your caseload?

- Early Childhood (0–3 years)
- Pre-School (~3–5 years)
- Elementary School (~5–10 years)
- Middle School (~11–13 years)
- High School (~14–21 years)
- Other

5. Approximately what percentage of your caseload is in each of these age ranges? The total should equal 100%.

	% of Your Caseload
Early Childhood (0–3 years)	
Pre-School (~3–5 years)	
Elementary School (~5–10 years)	
Middle School (~11–13 years)	
High School (~14–21 years)	
Other	

Appendix A (p. 2 of 6)

Online Survey

6. For each age group, what percentage of children on your caseload are expressively verbal and produce at least two-word utterances?

	% of Your Caseload
Early Childhood (0–3 years)	
Pre-School (~3–5 years)	
Elementary School (~5–10 years)	
Middle School (~11–13 years)	
High School (~14–21 years)	
Other	

7. For each age group, what percentage of children on your caseload do you target expressive use of grammatical forms?

	% of Your Caseload
Early Childhood (0–3 years)	
Pre-School (~3–5 years)	
Elementary School (~5–10 years)	
Middle School (~11–13 years)	
High School (~14–21 years)	
Other	

Section 2

8. For your largest caseload (indicated in 4), what percent of children with at least one grammatical treatment goal falls into each of the following diagnostic categories? The total should equal 100%.

	% of Your Caseload
Specific/Primary Language Impairment	
Autism Spectrum Disorder	
Other Development Disability	
Other Diagnosis	

9. For your largest caseload (indicated in 4), list five grammatical forms that you most frequently target in therapy.

- 1)
- 2)
- 3)
- 4)
- 5)

10. For your largest caseload (indicated in 4) in a typical session, what percentage of time is focused on grammatical targets? Examples of some specific grammatical targets include BE auxiliaries *is, are, was*; past tense *-ed*; third-person singular *-s*; pronouns *I, she, they*; conjunctions *and, or, but*.

11. For your largest caseload (indicated in 4), in a typical session targeting grammar development, approximately how many opportunities to learn grammatical targets does a child receive?

- 0–5
- 6–10
- 11–20
- 21–50
- > 50

Appendix A (p. 3 of 6)

Online Survey

12. For your largest caseload (indicated in 4), what is the length of a typical session targeting grammar development (in minutes)?
13. For your largest caseload (indicated in 4), in approximately how many sessions per month do you target grammatical forms?
14. For your largest caseload (indicated in 4), if resources were unlimited, what would be the ideal dosage for direct, speech-language pathologist– delivered treatment of grammatical forms?
 % of session
 Length of session
 Teaching opportunities per session
 Sessions per month
15. For your largest caseload (indicated in 4), when targeting grammatical forms, what percentage of treatment time does a child on your caseload spend in each context? The total should equal 100%.

	% of Treatment Time
One-on-one at home	
One-on-one in therapy room	
Small group in therapy room	
One-on-one in classroom	
Small group in classroom	
Whole class instruction	
Other, please specify:	

16. For your largest caseload (indicated in 4), if resources were unlimited, when targeting grammatical forms, what percentage of treatment time would a child on your caseload ideally spend in each context? The total should equal 100%.

	% of Treatment Time
One-on-one at home	
One-on-one in therapy room	
Small group in therapy room	
One-on-one in classroom	
Small group in classroom	
Whole class instruction	
Other, please specify:	

17. For your largest caseload (indicated in 4), when targeting grammatical forms, which goal attack strategies do you typically use? (Select all that apply.)
- Horizontal: Simultaneously targeting multiple specific grammatical goals with a single session (e.g., working on all pronouns).
 - Vertical: Addressing one specific grammatical goal to a set criterion before progressing to the next goal (e.g., working on pronoun *she* to criterion before moving on to pronoun *they*).
 - Cyclical: Addressing one specific grammatical goal for a set period of time regardless of performance level before progressing to the next goal (e.g., working on pronoun *she* for 1 week; working on pronoun *they* for 1 week; then going back to work on *she* for one week).
 - Other, please specify: (4) _____

Appendix A (p. 4 of 6)

Online Survey

18. For your largest caseload (indicated in 4), indicate the frequency that you use each of the following procedures when targeting grammatical forms.

	Never	Sometimes	Frequently
Models	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recasts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Requests for imitation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Explicit presentations of the pattern guiding the target form	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. For your largest caseload (indicated in 4), please indicate the frequency with which you directly use each of the following activities when targeting grammatical forms.

	Never	Sometimes	Frequently
Drill	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play with toys	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conversation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worksheets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Book reading	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Narrative development and production	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Academic coursework	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Writing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. For your largest caseload (indicated in 4), how frequently do you directly coach parents, teachers, or other service providers to use strategies to support grammatical development?

	Never	Sometimes	Frequently
Parent	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other service provider	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. For your largest caseload (indicated in 4), how frequently do you use the following tools to monitor progress on grammatical treatment goals? (Select all that apply.)

	Never	Sometimes	Frequently
Observation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informal language sample	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Language sample analysis (e.g., mean length utterance, other analysis)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informal probes	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Standardized test	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent report	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher report	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix A (p. 5 of 6)

Online Survey

If “Language sample analyses” is marked Sometimes or Frequently in 21:

22. For your largest caseload (indicated in 4), please select up to three language sample analyses that you use most often to monitor progress on grammatical treatment goals (select up to three choices):

- CLAN (Computerized Language Analysis)
- DSS (Developmental Sentence Scoring)
- IPSyn (Index of Productive Syntax)
- LARSP (Language Assessment, Remediation and Screening Procedure)
- MLU (Mean Length of Utterance)
- TTR (Type–Token Ratio)
- Other, please specify: _____

If “Standardized test” is marked Sometimes or Frequently in 21:

23. For your largest caseload (indicated in 4), please select up to three standardized tests that you use most often to monitor progress on grammatical treatment goals (select up to three choices):

- Bankson Language Test-2 (BLT)
- Battelle Developmental Inventory-2 (BDI)
- Carrow Elicited Language Inventory (CELI)
- Children’s Communication Checklist-2 (CCC-2)
- Clinical Evaluation of Language Fundamentals (CELF)
- Comprehensive Assessment of Spoken Language (CASL)
- Diagnostic Evaluation of Language Variation (DELV)
- Illinois Test of Psycholinguistic Abilities (ITPA)
- Multilevel Informal Language Inventory (MILI)
- Northwestern Syntax Screening Test (NSST)
- Oral & Written Language Scales (OWLS)
- Preschool Language Assessment Instrument (PLAI)
- Preschool Language Scale (PLS)
- Receptive-Expressive Emergent Language Scale (REELS)
- Renfrew Bus Story
- Rice/Wexler Test of Early Grammatical Impairment (TEGI)
- Sequenced Inventory of Communication Development (SICD)
- Structured Photographic Expressive Language Test (SPELT)
- Test for Auditory Comprehension of Language (TACL)
- Test for Examining Expressive Morphology (TEEM)
- Test for the Reception of Grammar (TROG)
- Test of Adolescent and Adult Language (TOAL)
- Test of Early Language Development (TELD)
- Test of Language Development (TOLD)
- Utah Test of Language Development (UTLD)
- Woodcock Language Proficiency Battery (WLPB)
- Other, please specify: _____

Section 3

24. In which state do you primarily work?

25. How many years have you been employed in the field of speech-language pathology?

- Less than 1 year
- 1 to 5 years
- 5 to 10 years
- 10 + years

26. What is the highest degree you hold?

- High School/GED
- Bachelor
- Master
- Ph.D.
- Ed.D.

27. Do you hold ASHA’s Certificate of Clinical Competence (CCC) in Speech-Language Pathology?

- Yes
- No

Appendix A (p. 6 of 6)

Online Survey

28. Indicate your sex.

- Male
- Female

29. Describe your racial background. (Select all that apply.)

- American Indian or Alaska Native
- Asian
- Native Hawaiian or Other Pacific Islander
- Black or African American
- White or Caucasian
- Other, please specify: _____

30. What is your ethnicity?

- Hispanic or Latino
- Not Hispanic or Latino

31. Would you like to be entered into a prize drawing for _____? If so, you will be redirected to a different site to enter your email address.

- Yes
- No

32. Would you like to be contacted for future research conducted by the Child Language Intervention Lab? If so, you will be redirected to a different site to enter your contact information.

- Yes
 - No
-

Appendix B

Standardized Assessments Included on the Survey

Test abbreviation	Citation
BLT	Bankson, N. W. (1990). <i>Bankson Language Test—Second Edition</i> . Austin, TX: Pro-Ed.
BDI	Newborg, J. (2004). <i>Battelle Developmental Inventory—Second Edition</i> . Rolling Meadows, IL: Riverside.
CELI	Carrow-Woolfolk, E. (1974). <i>Carrow Elicited Language Inventory</i> . Boston, MA: Teaching Resources Corporation.
CCC	Bishop, D. (2006). <i>Children’s Communication Checklist—Second Edition, U.S. Edition</i> . San Antonio, TX: The Psychological Corporation.
CELF	Wiig, E. H., Semel, E., & Secord, W. A. (2013). <i>Clinical Evaluation of Language Fundamentals—Fifth Edition</i> . San Antonio, TX: Pearson.
CASL	Carrow-Woolfolk, E. (2017). <i>Comprehensive Assessment of Spoken Language—Second Edition</i> . Torrance, CA: Western Psychological Services.
DELV	Seymour, H. N., Roeper, T. W., & de Villiers, J. (2005). <i>Diagnostic Evaluation of Language Variation—Norm-Referenced</i> . San Antonio, TX: The Psychological Corporation.
ITPA	Hammill, D. D., Mather, N., & Roberts, R. (2001). <i>Illinois Test of Psycholinguistic Abilities—Third Edition</i> . Austin, TX: Pro-Ed.
MILI	Goldsworth, C., Secord, W., & Charles E. Merrill Company (1982). <i>Multilevel Informal Language Inventory</i> . Columbus, OH: CE Merrill.
NSST	Lee, L. L. (1971). <i>Northwestern Syntax Screening Test</i> . Evanston, IL: Northwestern University Press.
OWLS	Carrow-Woolfolk, E. (1995). <i>Oral and Written Language Scale</i> . Circle Pines, MN: AGS.
PLAI	Blank, M., Rose, S. A., & Berlin, L. J. (2003). <i>Preschool Language Assessment Instrument—Second Edition</i> . East Moline, IL: LinguiSystems.
PLS	Zimmerman, I. L., Steiner, V. G., & Pond, R. E. (2002). <i>Preschool Language Scale—Fourth Edition (PLS-4), English Edition</i> . San Antonio, TX: The Psychological Corporation.
REELS	Bzoch, K. R. (1991). <i>Receptive-Expressive Emergent Language Scale</i> . Austin, TX: Pro-Ed.
Renfrew Bus Story	Cowley, J., & Glasgow, C. (1994). <i>Renfrew Bus Story: Language screening by narrative recall</i> . Centreville, DE: The Centreville School.
TEGI	Rice, M. L., & Wexler, K. (2001). <i>Rice/Wexler Test of Early Grammatical Impairment</i> . San Antonio, TX: The Psychological Corporation.
SICD	Hedrick, D. L., Prather, E. M., & Tobin, A. R. (1995). <i>Sequenced Inventory of Communication Development</i> . Los Angeles, CA: Western Psychological Services.
SPELT	Dawson, J., & Stout, C. (2003). <i>Structured Photographic Expressive Language Test—Third Edition</i> . DeKalb, IL: Janelle Publications.
TACL	Carrow-Woolfolk, E. (1999). <i>Test for Auditory Comprehension of Language—3rd Edition</i> . Austin, TX: Pro-Ed.
TEEM	ShIPLEY, K. G., Sue, M. B., & Stone, T. A. (1983). <i>Test for Examining Expressive Morphology</i> . Tucson, AZ: Communication Skill Builders.
TROG	Bishop, D. (2003). <i>Test for Reception of Grammar</i> . Minneapolis, MN: Pearson.
TOAL	Hammill, D., Brown, V., Larsen, S. C., & Wiederholt, J. L. (2007). <i>Test of Adolescent and Adult Language: Assessing Important Aspects of Spoken and Written Language—Fourth Edition</i> . Austin, TX: Pro-Ed.
TELD	Hresko, W. P., Reid, D. K., & Hammill, D. D. (1999). <i>Test of Early Language Development—Third Edition</i> . East Moline, IL: LinguiSystems.
TOLD	Hammill, D. D., & Newcomer, P. L. (2008b). <i>Test of Language Development—Primary, Fourth Edition</i> . Austin, TX: Pro-Ed.
UTLD	Mecham, M. J. (1978). <i>Utah Test of Language Development</i> . Salt Lake City, UT: Communication Research Associates.
WLTPB	Woodcock, R. W. (1991). <i>Woodcock Language Proficiency Battery—Revised</i> . Itasca, IL: Riverside Pub.