

Approaches to Grammar Intervention: A Look at Current Practice

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## **Dedication**

This thesis is dedicated to the faculty of the Speech-Language-Hearing Sciences department at the University of Minnesota-Twin Cities. Thank you for your dedication to providing clinicians with evidence to guide clinical practice and for making Shevlin Hall feel like home for the past six years. It has been an incredible opportunity.

## Table of Contents

List of Figures.....	v
List of Figures.....	vi
<b>Introduction.....</b>	<b>8</b>
<b>Survey.....</b>	<b>17</b>
<b>Recruitment.....</b>	<b>17</b>
<b>Participants.....</b>	<b>18</b>
<b>Analyses and Coding.....</b>	<b>23</b>
<b>Results.....</b>	<b>25</b>
<b>Early Education.....</b>	<b>25</b>
Caseload diagnoses.....	25
Intervention Targets.....	26
Intervention Context.....	28
Intervention Agent.....	31
Intervention Procedures.....	32
Goal Attack Strategies.....	33
Intervention Activities.....	33
Dosage.....	35
Percentage of time focused on grammatical targets.....	35
Number of Sessions per Month.....	36
Number of Opportunities per Session.....	37
Length of Session.....	38
Re-Assessment.....	39
Language Sample Analyses.....	41
Standardized Assessment.....	41
<b>Elementary.....</b>	<b>42</b>
Caseload Diagnoses.....	42
Intervention Targets.....	43
Intervention Context.....	44
Intervention Agent.....	47
Intervention Procedures.....	47
Goal Attack Strategies.....	48
Intervention Activities.....	49
Dosage.....	51
Percentage of time focused on grammatical targets.....	51
Number of Sessions per Month.....	52
Number of opportunities per session.....	53
Length of Session.....	54
Re-Assessment.....	55
Language Sample Analyses.....	57
Standardized Assessment.....	57
<b>Middle/High School.....</b>	<b>58</b>
Caseload Diagnoses.....	58

Intervention Targets.....	59
Intervention Contexts.....	59
Intervention Agents.....	63
Intervention Procedures.....	63
Goal Attack Strategies.....	64
Intervention Activities.....	65
Dosage.....	67
Percentage of time focused on grammatical forms.....	67
Number of Sessions per Month.....	68
Number of opportunities per session.....	69
Length of Session.....	70
Re-assessment.....	71
Language Sample Analyses.....	73
Standardized Assessment.....	73
<b>Discussion</b> .....	74
<b>Study Limitations</b> .....	77
<b>References</b> .....	80
<b>Appendix</b> .....	85
Consent Information Sheet.....	85
Survey.....	86
Codes for Grammar Intervention.....	95
Data Tables.....	96
Standardized Assessments Used for Each Age Group.....	106

**List of Figures.**

Figure 1. Main Components of Grammar Intervention ..... 10

Figure 2. Early Education: Caseload Diagnoses..... 26

Figure 3. Early Education: Treatment Contexts ..... 29

Figure 4. Early Education: Ideal Treatment Contexts ..... 30

Figure 5. Early Education Participants’ Frequency Ratings: Intervention Agents ..... 31

Figure 6. Early Education Participants’ Frequency Ratings: Therapy Procedures..... 32

Figure 7. Early Education Participants’ Frequency Ratings: Therapy Activities ..... 34

Figure 8. Early Education Participants’ Frequency Ratings: Re-Assessment Methods ... 40

Figure 9. Elementary School: Caseload Diagnoses ..... 42

Figure 10. Elementary: Treatment Contexts ..... 45

Figure 11. Elementary: Ideal Treatment Contexts ..... 46

Figure 12. Elementary Participants’ Frequency Ratings: Intervention Agents ..... 47

Figure 13. Elementary Participants’ Frequency Ratings: Therapy Procedures ..... 48

Figure 14. Elementary Participants’ Frequency Ratings: Therapy Activities ..... 50

Figure 15. Participants Frequency Ratings: Tools Used for Monitoring Progress in  
Elementary Education ..... 56

Figure 16. Middle/High School: Caseload Diagnoses ..... 58

Figure 17. Middle/High School: Treatment Contexts..... 61

Figure 18. Middle/High School: Ideal Treatment Contexts..... 62

Figure 19. Middle/High School Clinician’s Frequency Ratings: Intervention Agents..... 63

Figure 20. Middle/High School Participants’ Frequency Ratings: Therapy Procedures.. 64

Figure 21. Middle/High School Participants’ Frequency Ratings: Intervention Activities  
..... 66

Figure 22. Middle/High School Participants’ Frequency Ratings: Methods of Re-  
Assessment..... 72

## List of Figures.

Table 1. Participants by Geographic Location.....	20
Table 2. Participants' Races.....	21
Table 3. Participants' Years of Clinical Experience.....	21
Table 4. Participants Working in each Setting Greater than 50% of the Time.....	22
Table 6. Participants' Largest Percentage of Caseloads by Age Group .....	23
Table 7. Early Education: Grammatical Intervention Targets .....	27
Table 8. Early Education: Use of Horizontal, Vertical, and Cyclical Goal Attack Strategies.....	33
Table 9. Early Education: Percentage of Time Spent Focused on Grammatical Targets in a Typical Session .....	35
Table 10. Early Education: Ideal Percentage of Time Focused on Grammatical.....	36
Table 11. Early Education: Number of Sessions per Month Spent Focused on Grammatical Targets.....	36
Table 12. Early Education: Ideal Number of Sessions per Month Spent Focused on Grammatical Targets.....	37
Table 13. Early Education: Number of Opportunities per Session Spent Focused on Grammatical Targets.....	37
Table 14. Early Education: Ideal Number of Opportunities per Session Focused on Grammatical Targets.....	38
Table 15. Early Education: Length of Session Spent Focused on Grammatical Targets .	38
Table 16. Early Education: Ideal Length of Session Spent Focused on Grammatical Targets.....	39
Table 17. Early Education: Language Sample Analyses .....	41
Table 18. Elementary: Grammatical Intervention Targets .....	43
Table 19. Elementary: Use of Horizontal, Vertical, and Cyclical Goal Attack Strategies	48
Table 20. Elementary: Percentage of Time Spent Focused on Grammatical Targets in a Typical Session .....	51
Table 21. Elementary: Ideal Percentage of Time Spent Focused on Grammatical Targets in a Typical Session .....	52
Table 22. Elementary: Number of Sessions per Month Spent Focused on Grammatical Targets.....	52
Table 23. Elementary: Ideal Number of Sessions per Month Spent Focused on Grammatical Targets.....	53
Table 24. Elementary: Number of Opportunities per Session Spent Focused on Grammatical Targets.....	53
Table 25. Elementary: Ideal Number of Opportunities per Session Spent Focused on Grammatical Targets.....	54
Table 26. Elementary: Current Length of Session Spent Focused on Grammatical Targets .....	54
Table 27. Elementary: Ideal Length of Session Spent Focused on Grammatical Targets	55
Table 28. Language Sample Analyses Used in Elementary School .....	57
Table 29. Middle/High School: Grammatical Intervention Targets .....	59



Table 30. Middle/High School: Use of Horizontal, Vertical, and Cyclical Goal Attack Strategies.....	64
Table 31. Middle/High School: Percentage of Time Spent Focused on Grammatical Targets in a Typical Session .....	67
Table 32. Middle/High School: Ideal Percentage of Time Spent Focused on Grammatical Targets in a Typical Session .....	68
Table 33. Middle/High School: Number of Sessions per Month Spent Focused on Grammatical Targets.....	68
Table 34. Middle/High School: Ideal Number of Sessions per Month Spent Focused on Grammatical Targets.....	69
Table 35. Middle/High School: Number of Opportunities per Session Spent Focused on Grammatical Targets.....	69
Table 36. Middle/High School: Ideal Number of Opportunities per Session Spent Focused on Grammatical Targets .....	70
Table 37. Middle/High School: Current Length of Session Spent Focused on Grammatical Targets.....	70
Table 38. Middle/High School: Ideal Length of Session Spent Focused on Grammatical Targets.....	71
Table 39. Language Sample Analyses Used in Middle/High School.....	73

## **Introduction**

Weaknesses in language development are associated with many disorders, including primary language impairment (PLI), autism spectrum disorder (ASD), intellectual and developmental disabilities, attention deficit hyperactivity disorder (ADHD), traumatic brain injury (TBI), psychological/emotional disorders, and hearing loss (American Speech-Language Hearing Association). Such weaknesses affect all modalities of language, and may have long-term negative effects on academic and vocational achievement if left untreated (Hulme, & Snowling 2013). One particular area of language that is frequently compromised across populations is grammar (Marchman, Wulfeck & Weismer 1999; Rice & Wexler, 1996; Bedore & Leonard, 1998), which includes the expressive use of morphology and syntax.

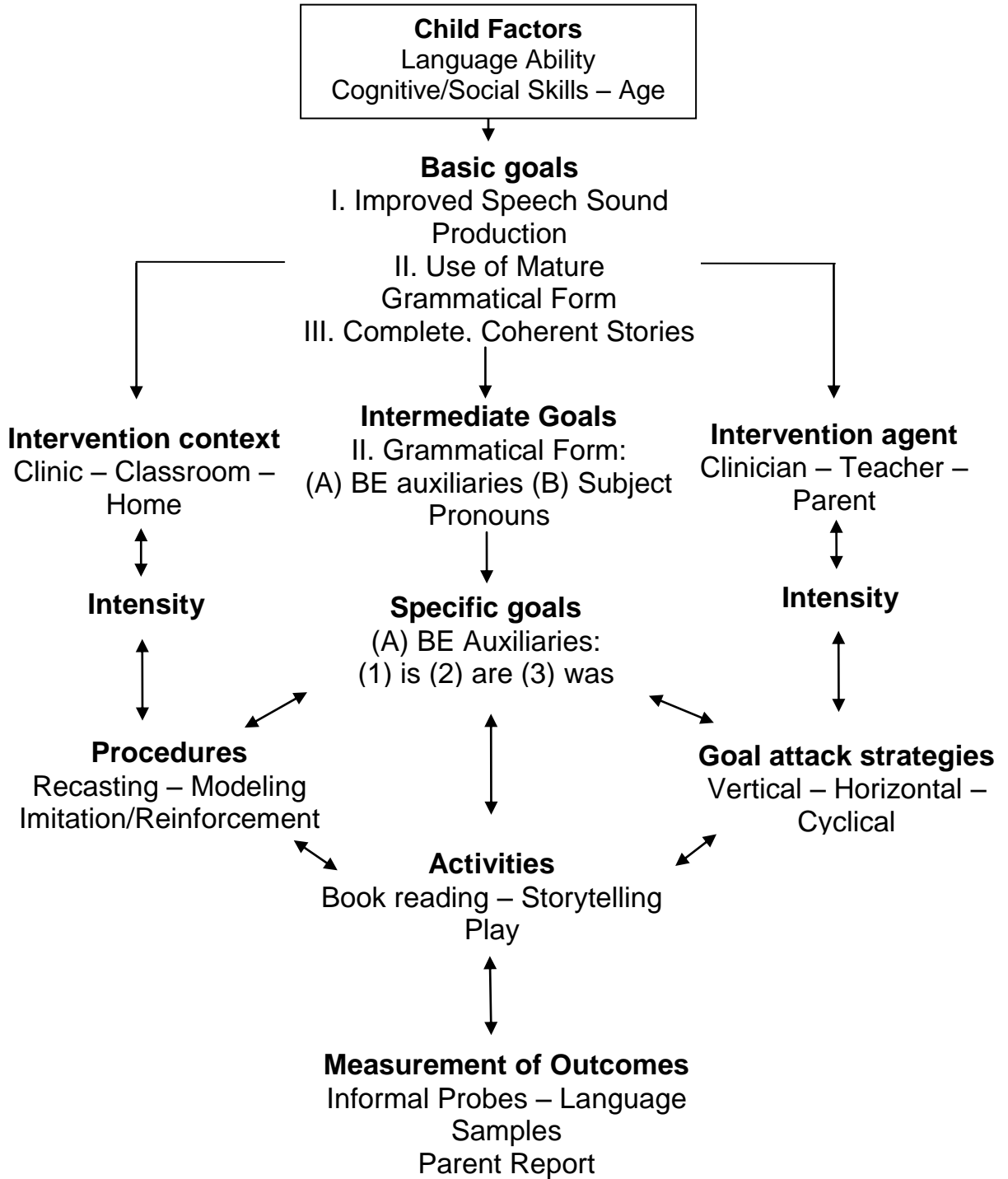
To this point, researchers have suggested that impairment in tense and agreement markers is a clinical marker of English-speaking children with SLI (Rice, Wexler, & Hershberger 1998). More specifically, children with SLI are more likely to omit tense and agreement grammatical markings, including third 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, Wexler, & Hershberger, 1998). While not as severe, these children also have difficulties with grammatical inflections not associated with tense and agreement, including articles, progressive -ing, and plural -s (Bishop, 1994; Oetting & Rice, 1993; Rice & Oetting, 1993; Rice & Wexler, 1996; Rice et al., 1998). Additionally, researchers have identified that there is a subset of children with ASD with grammatical weaknesses similar to those of children with SLI (Roberts, Rice, & Tager-Flusberg,

2001). Thus, speech-language pathologists working with children and adolescents frequently target expressive use of grammatical forms in intervention.

When implementing interventions for children targeting grammatical forms, there are many features that work together to build the intervention. McCauley and Fey present a language intervention hierarchy that comprises nine main components (McCauley & Fey, 2006), which are central features that define every intervention. Figure 1 is an adapted model from McCauley and Fey's original created by Fey and Finestack (2009) and includes examples of each component. These components include goals, intervention contexts, procedures, goal attack strategies, activities, dosage, and measurement of outcomes. In the following paragraphs, we will describe each of these components and provide examples of how a clinician might implement the component when targeting grammatical forms.

In the model, the first intervention components are the goals, broken down into basic, intermediate, and specific goals. Basic goals broadly identify the main area of treatment focus (e.g., increase use of multiword constructions, improve expressive vocabulary). Intermediate goals provide more specific direction for obtaining basic goals, by specifying categories within the basic domain on which to focus (e.g., agent+action, science vocabulary). Specific goals identify the target forms (e.g., cat/dog+runs/drinks; weather terms: cirrus clouds, tornado). A child with grammar-focused goals might have the basic goal to increase accurate production of grammatical structures, the intermediate goal to improve accuracy of tense forms, and specific goals focused on regular and irregular past-tense -ed forms.

Figure 1. Main Components of Grammar Intervention



From 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: Psychology Press.

Intervention context refers to the location of treatment and the broader intervention environment. Examples of intervention locations include the therapy room (in a clinic or school), classroom, and home. The broader environment describes whether the intervention is delivered individually, in small groups, or the entire classroom. Intervention agent refers to the individual who is providing the treatment. The agent will almost always include the clinician, but may also include teachers, parents, or other caregivers.

Procedures are considered the ‘active ingredients’ to intervention and comprise the actions performed by the intervention agent to support the child’s language development toward their specific goals (McCauley and Fey, 2006). Examples of intervention procedures include actions such as modeling, recasting, explicit instruction, and imitation. Intervention agents are likely to use more than one procedure when working with a child. For example, when targeting regular past-tense forms, within a 30 min intervention session, the clinician might model the target form (e.g., *Look! The dog just jumped over the puddle.*) 15 times in different sentences and recast all of the child’s attempts to produce the form by inserting the omitted past-tense morpheme target (e.g., Child: *The cat just meow.* Clinician: *Yes, the cat just meowed.*).

Goal attack strategies define the sequence in which specific goals are targeted. 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. For example, if using a vertical strategy, a clinician would wait until the

child produces the regular past-tense –ed form in 90% of spontaneous utterances in three consecutive sessions before targeting irregular past-tense verbs.

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 intervention for another goal. For example, if targeting regular and irregular past-tense verbs using a horizontal strategy, the clinician would target both past-tense verb forms in the same session. If the child meets the set criterion for regular past-tense forms, the clinician would replace this specific goal with a specific goal focused on past-tense auxiliary forms. The clinician would then target irregular past-tense forms and past-tense auxiliary forms within a session.

When using a cyclical goal attack strategy, the intervention agent targets each specific goal for a pre-determined period of time. Once the agent targets each goal for the set time period, the agent repeats the goal cycle, regardless of the child's progress. For example, if targeting tense forms using a cyclical strategy, the clinician would target regular past-tense forms for four sessions; then, target irregular past-tense forms for four sessions; and then target past tense auxiliary forms for four sessions. After completing this cycle, the clinician would repeat the cycle beginning again by targeting regular past-tense forms for four sessions.

Activities are a means through which intervention procedures are implemented by the intervention agent. 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). For example, a clinician may read a story to the child and ask the child to retell the story using toys/objects found within the story. This

creates opportunities for the child to use the past tense target form and for the clinician to recast attempts.

Dosage specifies the frequency of treatment sessions, the duration of sessions, and the frequency at which grammatical targets are addressed in each session. For example, the dosage of intervention for regular past-tense forms might be 8, 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.

Measurement of outcomes reflects the use of assessments, such as informal probes, language samples, and parent reports, to monitor progress toward intervention goals. Depending on the measure used, the assessment may provide information regarding progress on the child's basic, intermediate, or specific goals. For example, to evaluate the basic goal to improve accuracy of grammatical structures, a clinician might use a conversational language sample to determine the percentage of the child's utterances that are grammatical. To evaluate the intermediate goal to improve accuracy of tense forms, the clinician might use a standardized assessment such as the *Structured Photographic Expressive Language Test* (Dawson, Stout, & Eyer, 2003) and analyze responses to each tense-focused item. The specific goal for the child to produce the regular past-tense –ed form in 90% of spontaneous utterances in three consecutive sessions might be monitored using a clinician-designed probe that gives the child 10 opportunities to spontaneously produce regular past-tense –ed forms in short sentences.

Together, these components define a child's language intervention program. Thus, it is important for clinicians to consider each component when designing and implementing grammatical interventions for children with language impairment. 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 used for the treatment platform. Given the large number of components to consider and the decision-making control of clinicians regarding many of these components, little is known regarding the composition of current grammatical interventions implemented by clinicians.

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 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 speech-language pathologists 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 the speech-language pathologist to implement. Thus, the research finding may be of little value to the clinician.

Additionally, it is important that the efficacy and effectiveness studies conducted by researchers to evaluate various intervention components closely reflect current practice, with changes limited to the dependent variables of interest. For example, a study examining efficacy of different treatment dosages should closely reflect current practice across as many treatment components as possible; while only varying treatment dosage.



Therefore, treatment components including context, agent, procedures, and activities should be as similar to clinical practice as possible. Major differences in intervention components, such as a difference in context (e.g., individual treatment rather than small group) may limit the generalizability of research findings.

Overall, we know very little regarding the grammatical intervention practices of currently practicing speech-language pathologists. Thus, the purpose of this study was to examine the procedures speech-language pathologists employ when targeting grammatical forms in intervention by surveying currently practicing clinicians. We also aimed to determine if there were any intervention features that clinicians would like to change if resources were available. To address these aims, we developed an online survey that queried clinicians regarding their clinical practice for each of the intervention components described by McCauley and Fey (2006). Our specific research questions were:

1. When targeting grammatical forms, how do currently practicing speech-language pathologists working in early education, elementary school, and middle/high school setting implement each intervention component defined by McCauley and Fey (2006) including the intervention:
  - a. Goals,
  - b. Contexts,
  - c. Procedures,
  - d. Goal attack strategies,
  - e. Activities,
  - f. Dosage, and

g. Re-Assessment.

2. If resources were unlimited, would currently practicing speech-language pathologists alter the intervention context or dosage? If so, how?

## **Method**

### **Survey**

We created an online survey to examine current practices of interventions targeting grammatical forms used by speech-language pathologists working with children. We used the University of Minnesota's instance of Qualtrics, a standards-compliant product procured by the University, to design and present the survey. The survey questions queried each area of the intervention hierarchy described by McCauley and Fey (2006). The complete survey is included in Appendix A.

The first portion of the survey focused on the participants' treatment environments, including clinical settings, caseload sizes, and ages of children served. Participants also reported the percentage of their caseloads that included children who were expressively verbal and with whom they were targeting grammatical goals. These first questions helped to ensure that the participants met the study inclusionary criteria. The survey prompted participants to answer questions in the second portion of the survey based on the age group they serve that represents the largest proportion of their caseload. These questions focused on treatment of grammatical goals including treatment targets, dosage, goal attack strategies, contexts, and assessment methods. In addition to current practice, the survey asked participants to report ideal intervention contexts and dosages. The final portion of the survey included questions regarding demographic characteristics such as participant gender, race, years of employment, and level of education. An institutional review board at the University of Minnesota approved the survey and study protocol.

### **Recruitment**

We used two strategies to recruit participants. First, research assistants generated a list of approximately 12,000 speech-language pathologists, using the American Speech-Language Hearing Association (ASHA) ‘Find a Professional’ portal. We filtered results by age and state. State-by-state, we set the filter to include only currently practicing speech-language pathologists working with children ages 3 to 11 years. The search criteria did not yield any speech-language pathologists in Oklahoma. We contacted the identified speech-language pathologists in two waves. In the first wave, we emailed survey participation invitations to 50 providers from each state, excluding Oklahoma. Approximately 5 weeks later, we emailed invitations to the remaining contacts. Across both waves, approximately 1,900 emails were returned as undeliverable. Thus, we successfully sent survey invitations to approximately 10,100 speech-language pathologists over a 2-month period. We also sent a reminder survey specifying the date the survey would close to all clinicians on our list. Second, we posted survey participation invitations on two ASHA community listservs: ‘SLP Schools’ and ‘Special Interest Group 01.’ We posted the invitation twice in a 5-week span.

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

### **Participants**

Participant consent was obtained at the beginning of the online survey. A total of 541 speech-language pathologists consented to participate and initiated the survey. Of these, 6 did not answer any further questions and 8 did not qualify because they were not currently practicing speech-language pathologists. A total of 139 participants responded

to a portion of questions, but did not complete the survey. None of these participants' responses were included in the study analyses. Thus, 388 participants fully completed the survey, including 14 male (4%), 368 female (94%), and 6 unspecified (2%). Some participants failed to respond to some questions. These responses are labeled as "missing" in the study results. Participants required an average of 23 minutes to complete the survey.

Participants represented 47 states and 3 international locations. Hawaii, Mississippi, and Wyoming were not represented (see Table 1). The majority of participants (86%) identified themselves as Caucasian (see Table 2). Almost all participants (95%) reported that they hold a master's degree. Only 1 participant reported having a bachelor's degree; 15 reported having an Ed.D. or Ph.D.; and 3 did not specify their education level. The majority of participants (68%) reported being in the field for more than 10 years (Table 3).

Table 1. Participants by Geographic Location

<b>Location</b>	<b><i>n</i></b>	<b>Location</b>	<b><i>n</i></b>
Alaska	2	North Dakota	3
Alabama	5	Nebraska	2
Arkansas	2	New Hampshire	5
Arizona	12	New Jersey	14
California	26	New Mexico	1
Colorado	12	Nevada	2
Connecticut	12	New York	6
Delaware	2	Ohio	10
Florida	12	Oklahoma	1
Georgia	18	Oregon	12
Iowa	4	Pennsylvania	20
Idaho	7	Rhode Island	1
Illinois	23	South Carolina	4
Indiana	8	South Dakota	5
Kansas	2	Tennessee	4
Kentucky	5	Texas	14
Louisiana	4	Utah	8
Massachusetts	20	Virginia	8
Maryland	11	Vermont	2
Maine	2	Washington	14
Michigan	8	Wisconsin	3
Minnesota	16	West Virginia	1
Missouri	6	International	2
Montana	1	Canada	1
North Carolina	19		

Table 2. Participants' Races

<b>Race</b>	<b><i>n</i></b>	<b>Percentage</b>
White or Caucasian	335	86.3%
Mixed	15	3.8%
Unspecified	15	3.8%
Asian	9	2.3%
Black or African American	7	1.8%
Other	4	1%
American Indian	2	<1%
Hispanic/Latino	1	<1%
Native Hawaiian/Other Pacific Islander	0	0%

Table 3. Participants' Years of Clinical Experience

<b>Years of Experience</b>	<b><i>n</i></b>	<b>Percentage</b>
Less than 1 year	4	1%
1-5 years	46	11.9%
5-10 years	73	1.9%
10+ years	264	68%
Missing	1	<1%

Table 4 displays the number participants who reported working at least 50% of the time in one of the following settings: early childhood, preschool, elementary school, middle school/junior high, high school, a medical setting, a clinical setting (not private practice), private practice, and university clinic. Participants reported to be predominantly working in elementary schools (37%) followed by private practice (19%). Six participants reported working outside of the categories provided. The other settings reported include administration, the client's home, and telepractice.

Table 4. Participants Working in each Setting Greater than 50% of the Time

<b>Setting</b>	<b>N</b>	<b>Percentage</b>
Elementary School	144	37.1%
Private Practice	74	19.1%
Pre-School	25	6.4%
Clinic Setting	22	5.7%
High School	14	3.6%
Junior High/Middle School	12	3.1%
Early Childhood/Birth-3	10	2.6%
Medical Setting	9	2.3%
Other	6	1.5%
University Clinic	4	1.0%

Further demographic data presented in Table 5 indicates participants' caseload sizes ranged from 1 child to greater than 76 children, with most participants reporting caseloads in the ranges of 16-30 (28%), 31-45 (25%), or 46-60 (20%) children.

Table 5. Participants' Caseload Sizes

<b>Number of Children</b>	<b>N</b>	<b>Percentage</b>
1-15	71	18.3%
16-30	110	28.4%
31-45	99	25.5%
46-60	78	20.1%
61-75	17	4.4%
>76	11	2.8%
Missing	2	<1%

Participants reported the age of the largest percentage of their caseloads within these age ranges: 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), and other. Participants' responses to these questions (see Table 6) allowed researchers to



analyze responses based on the age group served. Participants completed the second portion of the survey based on their responses to this question (e.g., “For your ‘elementary aged caseload,’ how frequently do you...?”).

Table 6. Participants’ Largest Percentage of Caseloads by Age Group

<b>Age</b>	<b><i>n</i></b>	<b>Percentage</b>
Early Childhood/Birth-Three	22	5.7%
Pre-School	92	23.70%
Elementary School	224	57.70%
Junior High/Middle School	27	7.00%
High School	18	4.60%
Other	4	1.00%
Missing	1	<1.0%

The demographics for our sample compared well with national data for currently practicing speech-language pathologists for gender, race, work setting, and state of residence (American Speech-Language-Hearing Sciences, 2014).

### **Analyses and Coding**

Most participants reported they spent the majority of their time working with children who were pre-school, elementary school, or middle school aged. Thus, we collapsed the participants into three age groups based on these responses. We grouped participants primarily working with children of birth to three or pre-school ages into the Early Education group ( $n = 114$ ). We grouped participants primarily working with elementary school aged children into the Elementary group ( $n = 224$ ). We grouped participants primarily working with children of middle or high school age into the Middle/High School group ( $n = 45$ ). We examined the grammatical intervention practices of participants based on these groupings.

Participants reported five grammatical goals that they typically target in their grammatical interventions. We coded the participants' responses based on the Brown's Grammatical Morpheme categories (Brown 1973). We collapsed some of the morpheme categories. For example, we coded irregular and regular past tense verbs as past-tense forms. It was necessary to add other syntactic categories, including pronouns, nouns, questions, expanding utterances (i.e., increasing MLU), and adjectives. Many participants reported general areas of focus such as "verbs." We simply coded such responses as "verbs." We coded other non-specific targets and responses that did not fit into any of the aforementioned categories as "other." Other and non-specific were collapsed for reliability. The author coded all participant responses. See appendix for coding table. A speech-language pathologist unfamiliar to the survey coded 20% of participant responses selected at random for reliability purposes. Interrater reliability ( $\frac{\# \text{ agreements}}{\# \text{ agreements} + \# \text{ disagreements}}$ ) was 91% for the Early Education group, 92% for the Elementary group, and 91% for the Middle/High School group.

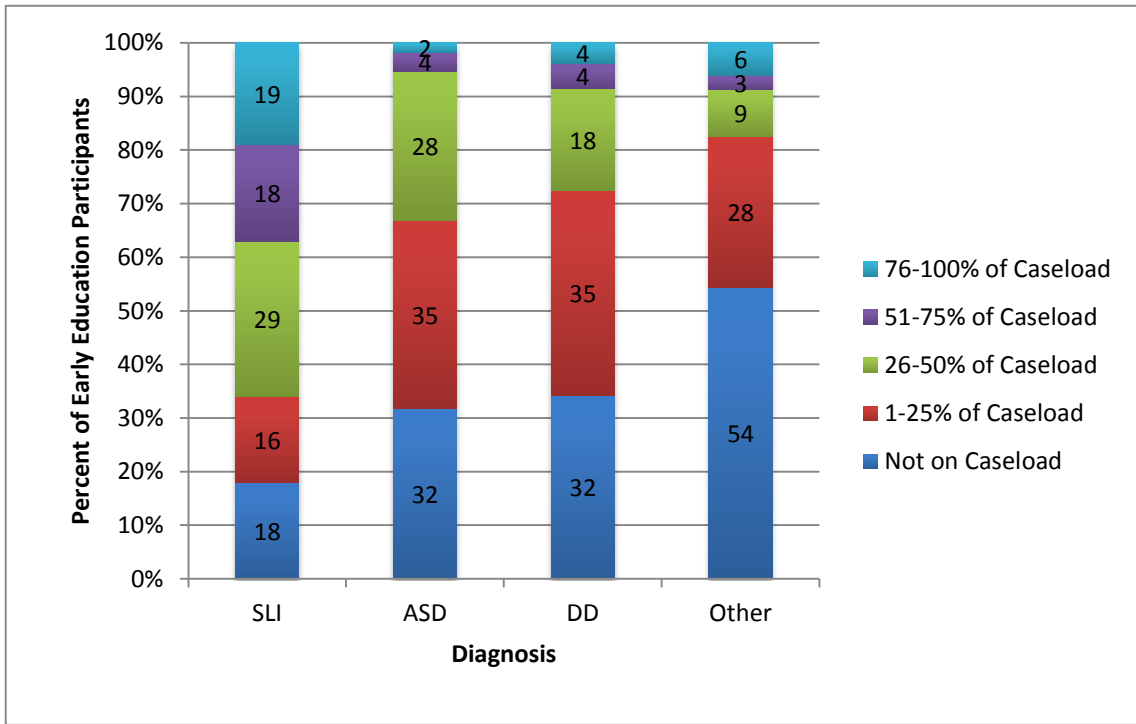
## **Results**

Results are organized according to the three age groups analyzed: Early Education, Elementary, and Middle/High School. Each section begins with a description of the diagnoses of the children served on the participants' caseloads. Then, we provide descriptions of responses regarding current practice for each intervention component. Within the context and dosage sections, we report the participants' ideal contexts and dosages. Expanded tables for each age group containing raw data for caseload diagnoses, ideal and current treatment contexts, and the other intervention components are included in the appendix.

### **Early Education**

**Caseload diagnoses.** Participants working primarily with children in early education reported the percentages of their caseload with at least one grammatical goal diagnosed as having specific language impairment (SLI), autism spectrum disorder (ASD), developmental disability (DD), and other diagnoses. Results presented in Figure 2 indicate that for approximately 37% of the participants, at least half of their caseload comprised children with SLI; for 9% of participants, at least half of their caseload comprised children with a different diagnosis; for 8% of participants, at least half of their caseload comprised children with a developmental disorder; and for 5% of participants, at least half of their caseload comprised students with ASD.

Figure 2. Early Education: Caseload Diagnoses



**Intervention targets.** Participants provided five grammatical targets frequently focused on during grammar intervention. Results presented in Table 7 indicate that the five most common grammatical targets used by the participants in the Early Education group are plural /s/ (56%), present progressive verbs (55%), regular and irregular past tense verbs (40%), pronouns (38%), and possessive -s (28%). Other goals specified included adverbs, ordinals, gerunds, and prefixes. Some examples of non-specific targets included semantics, morphology, word structures, linking verbs, and suffixes.

Table 7. Early Education: Grammatical Intervention Targets

Targets	<i>n</i>	Percentage of Participants
Plural –s	64	56%
Present Progressive Verbs	63	55%
Regular and Irregular Past Tense	46	40%
Pronouns	43	38%
Possessive –s	32	28%
Expanding Utterances	28	25%
Other	27	24%
Prepositions	24	21%
Copula ‘be’	20	18%
Auxiliary verbs	17	15%
Questions	17	15%
Verbs (Non-Specific)	17	15%
Articles ‘a’ ‘an’ ‘the’	13	11%
Negatives	7	6%
Nouns	6	5%
Adjectives	6	5%
Syntax (Non-Specific)	5	4%
Regular and Irregular Third Person	3	3%
Irregular Verbs (Non-Specific)	2	2%

**Intervention context.** Participants in the Early Education group indicated the percentage of time they spend treating grammatical forms in the following contexts: individual therapy at home, individual therapy in therapy room, small group therapy in therapy room, individual therapy in classroom, small group therapy in classroom, whole class instruction, and other contexts. Results presented in Figure 3 indicate that for 45% of participants, greater than 75% of their time is spent providing individual therapy in the therapy room. About one third of participants reported providing individual therapy at home (34%). Very few participants reported delivering intervention by whole class instruction, individual instruction in the classroom, or small group instruction in the classroom. Other specified contexts of intervention included homework, co-treating with parent present, teletherapy, in the gym, and parent education.

Participants reported, if resources were unlimited, the ideal percentage of time children would spend in each treatment context. Results presented in Figure 4 indicate more than half of participants reported no changes in treatment time in the following contexts: whole class instruction (79%), individual therapy in the classroom (81%), small group therapy in the classroom (74%), and small group therapy in the therapy room (68%). Many participants (46%) reported a decrease in percentage of time in individual therapy in the therapy room. These participants desired an average decrease of 38% of treatment time in individual therapy in the therapy room. Several participants (35%) reported wanting an increase in individual therapy at home. These participants desired an average increase of 33%.

Figure 3. Early Education: Treatment Contexts

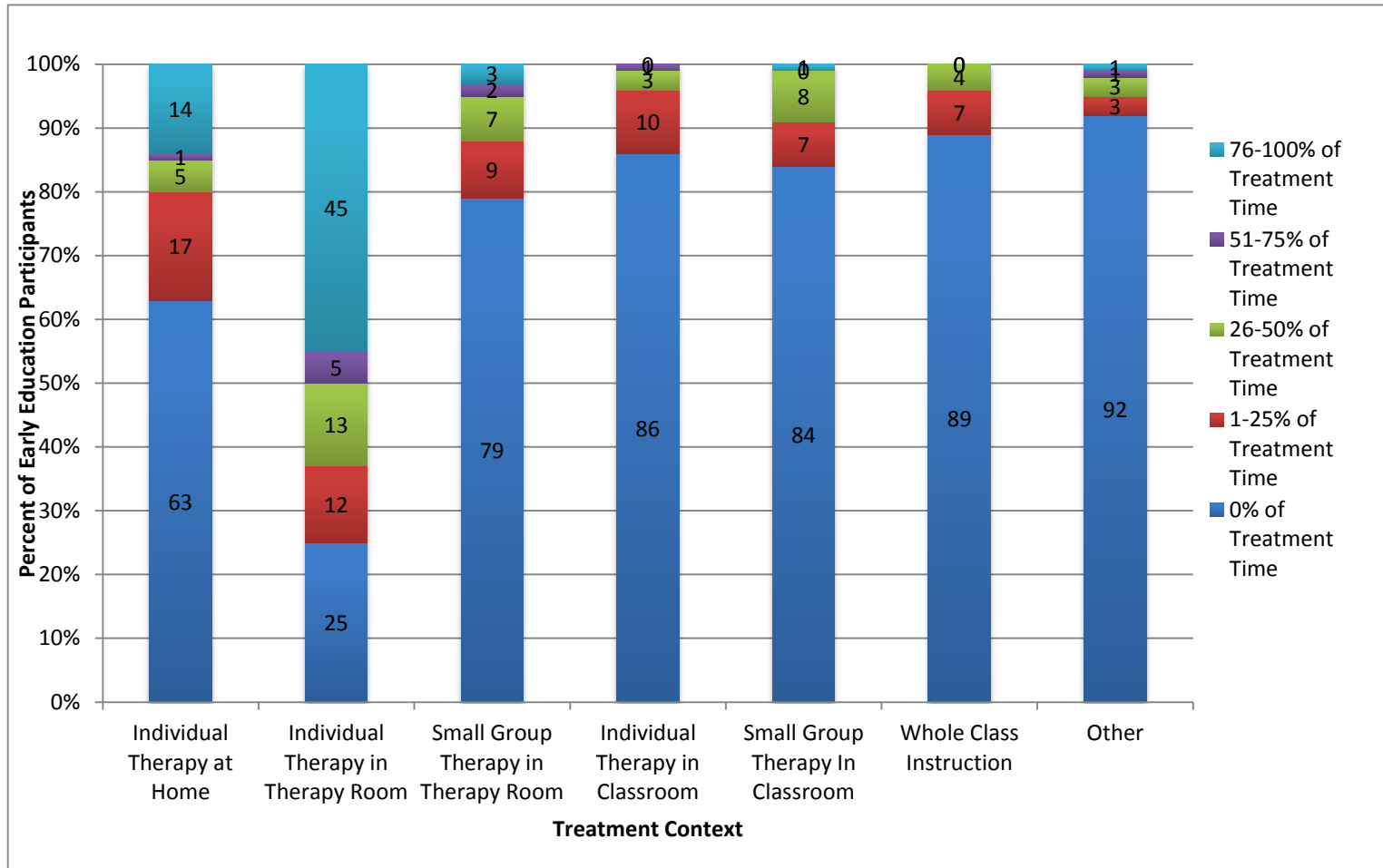
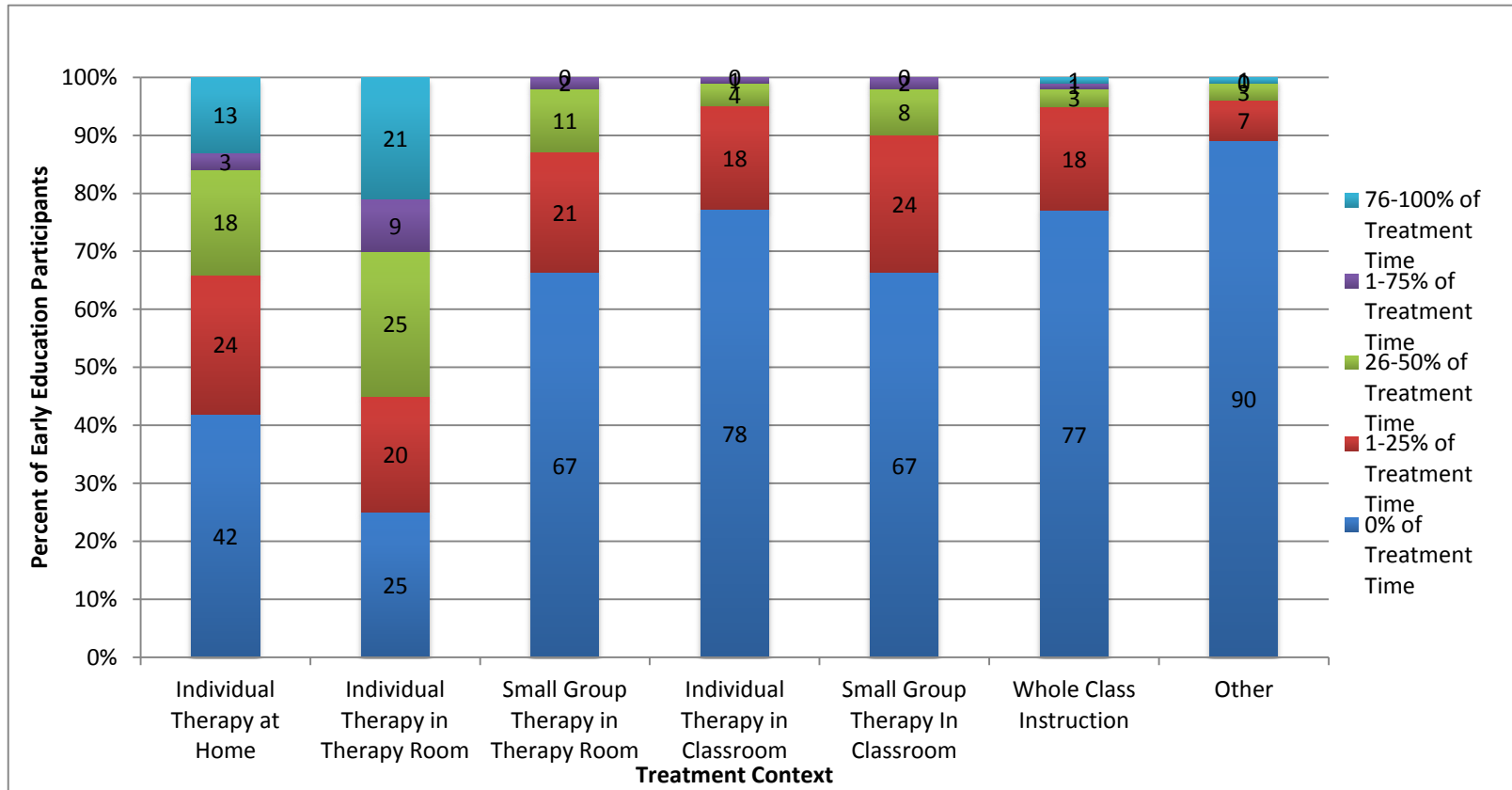


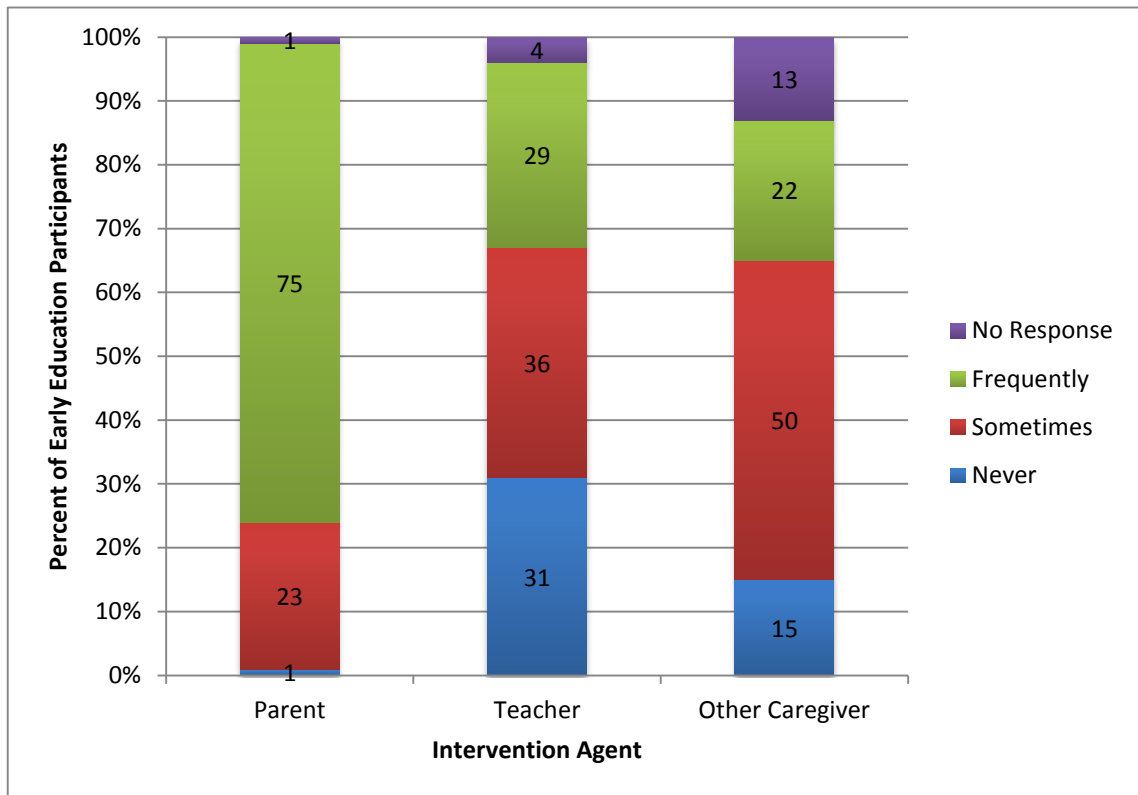
Figure 4. Early Education: Ideal Treatment Contexts





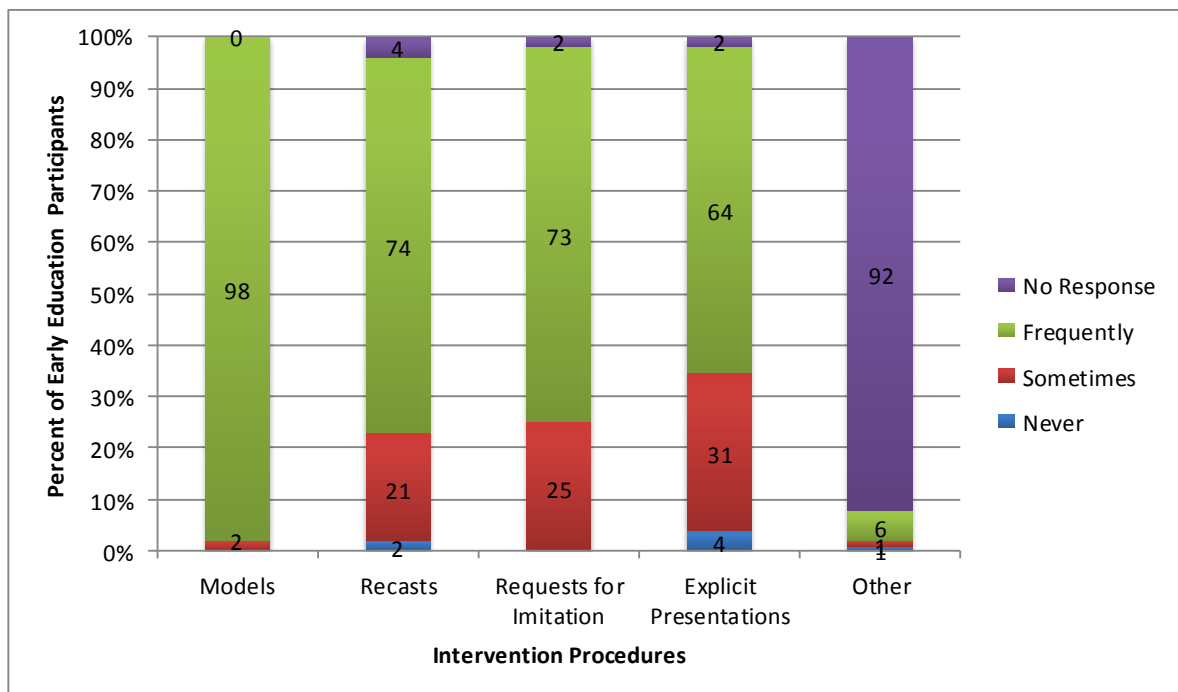
**Intervention agent.** Participants rated the frequency they coach parents, teachers, and other caregivers. Results presented in Figure 5 indicate more than 75% of participants frequently coach parents. Only one participant reported never coaching parents. Less than half of participants reported that they frequently coach teachers (30%) and other caregivers (22%).

Figure 5. Early Education Participants' Frequency Ratings: Intervention Agents



**Intervention procedures.** We asked participants to rank the frequency at which, when targeting grammatical forms, they use the following intervention procedures: modeling, recasting, requesting imitation, and explicit presentations. Results are presented in Figure 6. Almost all participants (98%) reported that they frequently use modeling. More than half of participants reported that they frequently use recasting (74%), requesting imitation (73%), and/or explicit presentations of rules guiding the target form (64%). Some participants (10%) specified they use other intervention procedures including, acoustic highlighting, parent modeling, sentence strips, and written words.

Figure 6. Early Education Participants' Frequency Ratings: Therapy Procedures



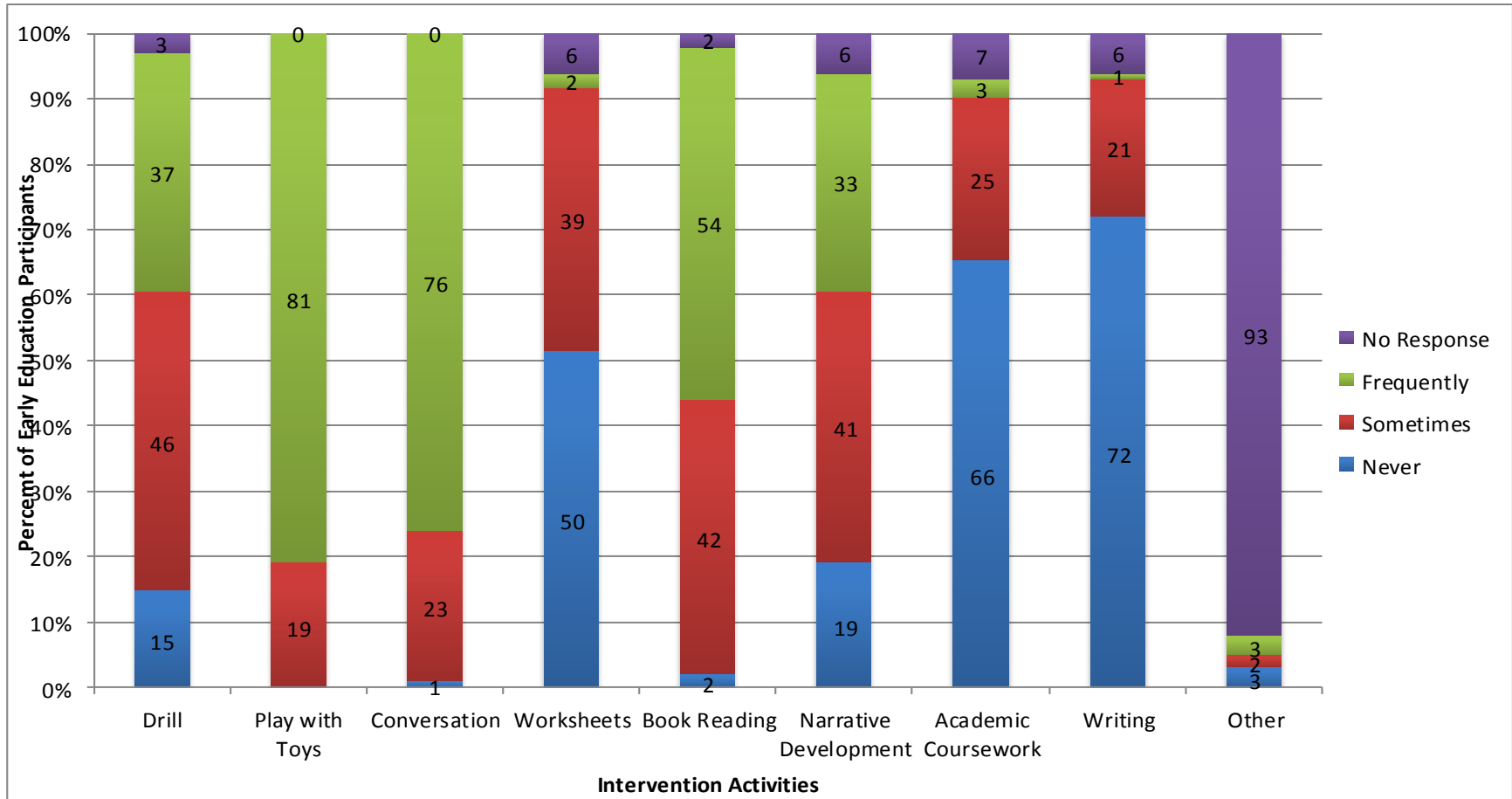
**Goal attack strategies.** Participants identified the goal attack strategies they typically use to treat grammatical forms: cyclical, vertical, or horizontal. In the Early Education group, 24% of participants reported they most typically use horizontal strategies, 24% of participants reported that they use cyclical strategies, and 33% reported that they use a combination of strategies.

Table 8. Early Education: Use of Horizontal, Vertical, and Cyclical Goal Attack Strategies

Strategy	<i>n</i>	%
Horizontal	27	23.7
Vertical	17	14.9
Cyclical	27	23.7
Combination of 2	21	18.4
Combination of 3	17	14.9
Other	4	3.5
Missing	1	<1
Total	114	

**Intervention activities.** Participants ranked the frequency at which, when targeting grammatical forms, they use the following intervention activities: drill, play with toys, conversation, worksheets, book reading, narratives, academic coursework, and writing. Results presented in Figure 7 indicate almost all participants in the Early Education group reported using play with toys (100%), conversation (>99%), and book reading (98%) sometimes or frequently. More than half of participants reported they frequently use play with toys (81%), conversation (76%), and book reading (54%). Participants (6%) specified other intervention activities, including computer activities, crafts, snacks, iPad applications, games, and sentence strips.

Figure 7. Early Education Participants' Frequency Ratings: Therapy Activities



**Dosage.**

*Percentage of time focused on grammatical targets.* Participants reported the percentage of time focused on grammatical targets in a typical session. Results presented in Table 9 indicate more than half of participants (68%) in the Early Education group reported that at least 26-50% of each therapy session is spent working on grammatical targets.

Table 9. Early Education: Percentage of Time Spent Focused on Grammatical Targets in a Typical Session

Percentage	<i>n</i>	%
0	1	<1
1-25	33	28.9
26-50	59	51.8
51-75	12	10.5
76-100	7	6.1
Missing	2	1.8

Participants reported the ideal percentage of time focused on grammatical targets in a typical therapy session if resources were unlimited. Results presented in Table 10 indicate more than half of participants (56%) reported an increase of 21%, suggesting that they would like to spend 50-75% of treatment time focused on grammatical targets. Less than half (38%) indicated no desire to change the amount of time focused on grammatical goals. Only a few participants (6%) indicated that they would decrease time focused on grammatical targets by an average of 19%.

Table 10. Early Education: Ideal Percentage of Time Focused on Grammatical Targets in a Typical Session

Percentage	<i>n</i>	%
0	1	<1
1-25	21	18.4
26-50	52	45.6
51-75	21	18.4
76-100	14	12.3
Missing	5	4.4

*Number of sessions per month.* Participants reported the number of sessions per month in which they focus on grammatical targets. Results are presented in Table 11. More than half of participants (53%) reported targeting grammatical forms in three to four therapy sessions per month. Many participants (41%) reported they focus on grammatical targets in more than four sessions per month.

Table 11. Early Education: Number of Sessions per Month Spent Focused on Grammatical Targets

Number	<i>n</i>	%
0	0	0
1-2	4	3.5
3-4	60	52.6
5-6	14	12.2
7-8	20	17.5
>8	13	11.4
Missing	3	2.6

Participants reported the ideal number of sessions per month focused on grammatical targets if resources were unlimited. Results are presented in Table 12. Most participants (65%) indicated that ideally, the number of sessions focused on grammatical forms would increase by an average of 4 sessions, suggesting ideal grammar intervention

would consist of more than 7 sessions per month. About 30% of participants indicated that they would not change the number of sessions focused on grammatical targets.

Table 12. Early Education: Ideal Number of Sessions per Month Spent Focused on Grammatical Targets

Number	<i>n</i>	%
0	0	0
1-2	1	<1
3-4	25	21.9
5-6	7	6.1
7-8	43	37.7
>8	34	29.8
Missing	4	3.5

*Number of opportunities per session.* Participants reported the average number of opportunities children on their caseload have to use grammatical targets during a typical session. Results presented in Table 13 indicate that more than half of participants (78%) reported that children receive more than 10 opportunities per session. About half of the participants (45%) reported children receive more than 21 opportunities to use grammatical targets per session on average.

Table 13. Early Education: Number of Opportunities per Session Spent Focused on Grammatical Targets

Opportunities	<i>n</i>	%
0-10	24	21.1
11-20	38	33.3
>21	51	44.7
Missing	1	<1

Participants also reported the ideal number of opportunities children would have to use grammatical targets during a typical session if resources were unlimited. Results are presented in Table 14. All participants working with children in this age group

indicated a desire to increase the number of opportunities by an average of 36 opportunities, suggesting an ideal number of opportunities per session would be about 46.

Table 14. Early Education: Ideal Number of Opportunities per Session Focused on Grammatical Targets

Opportunities	<i>n</i>	%
0-10	14	12.3
11-20	16	14.0
>21	75	65.8
Missing	9	7.9

*Length of session.* Participants reported the length, in minutes, of a typical session focused on teaching grammatical targets. Results are presented in Table 15. About half of the participants (46%) reported sessions targeting grammatical forms are between 21 and 40 minutes.

Table 15. Early Education: Length of Session Spent Focused on Grammatical Targets

Length (in minutes)	<i>n</i>	%
1-20	36	31.6
21-40	52	45.6
>41	25	21.9
Missing	1	<1

Participants reported the ideal length of a session with focus on grammatical targets if resources were unlimited. Results are presented in Table 16. Half of participants indicated that they would not change the session length. Many participants (37%) indicated a desired increase in session length of 24 minutes. Thus, many participants reported an ideal session of length between 45 and 64 minutes.

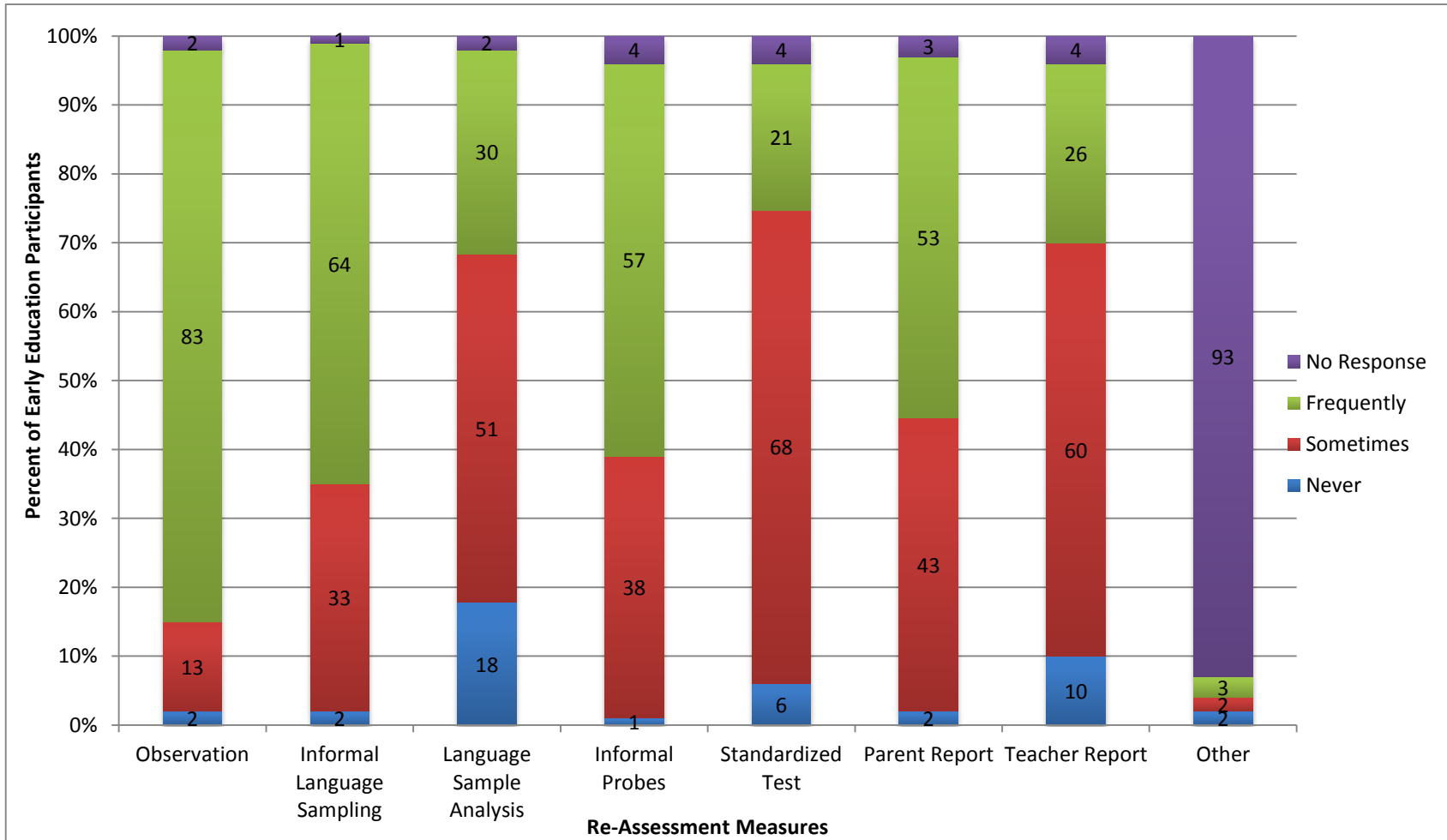


Table 16. Early Education: Ideal Length of Session Spent Focused on Grammatical Targets

Length (in minutes)	<i>n</i>	%
1-20	14	12.3
21-40	32	28.1
>41	36	31.6
Missing	32	28.1

**Re-assessment.** Participants ranked the frequency at which they use the following re-assessment tools: observation, informal language sampling, language sample analyses, informal probes, standardized test, parent report, and teacher report. Results presented in Figure 8 indicate that more than half of participants working in early education reported they frequently use observation (83%), informal language sampling (64%), informal probes (57%), and parent report (53%). Some participants reported they never use teacher report (24%) or formal language sample analysis (18%). Some participants (5%) specified other tools they use to monitor progress including data collection from every treatment session and video recordings.

Figure 8. Early Education Participants' Frequency Ratings: Re-Assessment Methods



*Language sample analyses.* We asked the participants who reported that they sometimes or frequently use language sample analyses to monitor progress with grammatical goals a follow-up question ( $n=92$ ). Participants identified up to three language sample analyses that they use most often. We provided participants options, but they could also specify ‘other’ options if they applied. Most participants working in the Early Education group (94%) reported they use mean length of utterance to monitor progress. Many participants (25%) also reported that they use type token ratio. Participants (9%) specified other types of language sample analyses used including Brown’s Stages, Bloom and Lahey’s model, use of grammatical targets in the sample, and informal measures.

Table 17. Early Education: Language Sample Analyses

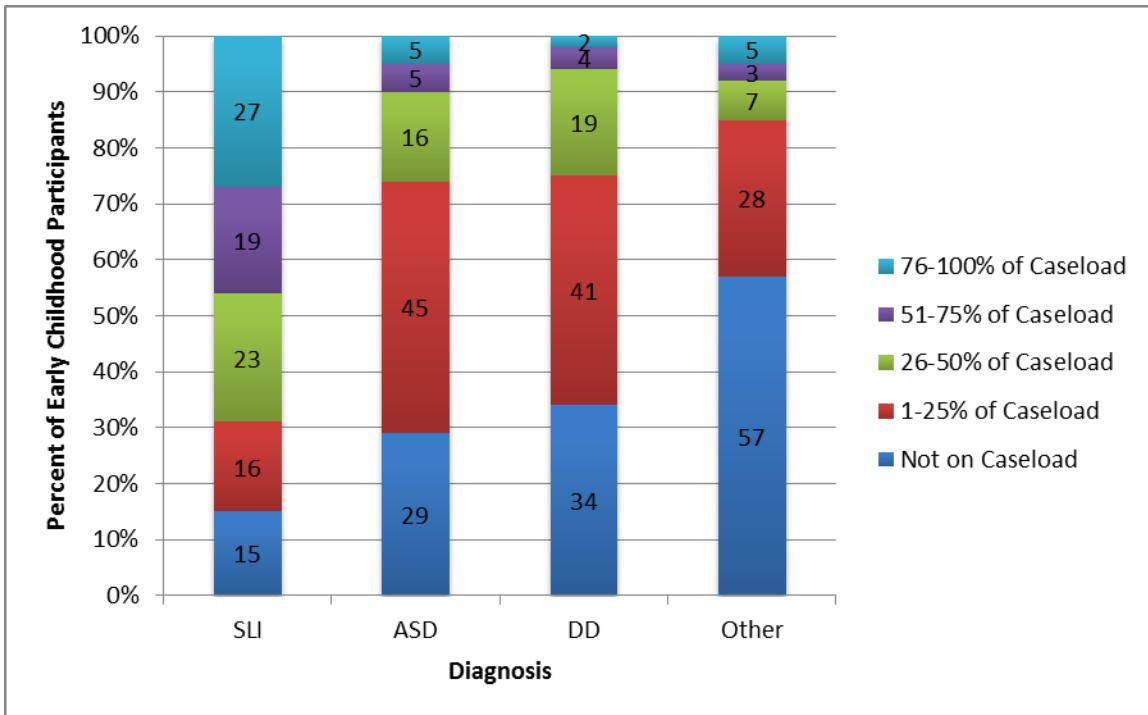
Analyses	<i>n</i>	%
CLAN	1	1
DSS	13	14.1
IPSyn	4	4.3
LARSP	7	7.6
MLU	86	93.5
TTR	23	25.0
Other	10	10.9

*Standardized assessment.* We asked the participants ( $n=89$ ) who reported that they sometimes or frequently use standardized assessments to monitor progress to identify up to three standardized assessments that they use most often. We provided participants options, but could report ‘other’ assessments, if applicable. Most participants reported they use the Preschool Language Scales (87%) and the Comprehensive Evaluation of Language Fundamentals (71%). Some participants (22%) reported that they use the Structured Photographic Expressive Language Test. Participants (6%) specified other standardized assessments including the Expressive Language Test, Rossetti, and Reynell Developmental Language Scales

## Elementary

**Caseload diagnoses.** Participants working primarily with children in elementary school reported the percentage of their caseload with at least one grammatical goal diagnosed as having SLI, ASD, DD, or other diagnoses. Results presented in Figure 9 indicate most participants reported at least some of their caseload is comprised of children with SLI (84%) ASD (71%) or DD (67%).

Figure 9. Elementary School: Caseload Diagnoses



**Intervention targets.** Participants provided five grammatical targets frequently focused on during grammar intervention. Results presented in Table 18 indicate the five most common grammatical targets are regular and irregular past tense (60%), pronouns (51%), plural –s (50%), expanding utterances (43%), and present progressive verbs (35%). Other goals specified included semantic relations, future verb tenses, meta-linguistics, adverbs, categorizing, dual marker in Arabic, gender agreement in Spanish, passive voice, use of I and me, and comparatives/superlatives.

Table 18. Elementary: Grammatical Intervention Targets

Targets	<i>n</i>	Percentage
Regular + Irregular Past Tense	134	60%
Pronouns	115	51%
Plural –s	111	50%
Expanding Utterances	97	43%
Present Progressive Verbs	78	35%
Other	59	26%
Verbs (Non-Specific)	47	21%
Prepositions	34	15%
Questions	34	15%
Copula ‘be’	33	15%
Adjectives	32	14%
Possessive –s	26	12%
Auxiliary verbs	26	12%
Irregular Verbs (Non-specific)	19	8%
Nouns	18	8%
Articles ‘a’ ‘an’ ‘the’	14	6%
Regular and Irregular Third Person	13	6%
Syntax (Non-Specific)	13	6%
Negatives	6	3%

**Intervention Context.** The percentage of time participants reported that they spend treating grammar in each context is reported in Figure 10. Most participants reported they provide intervention primarily in the therapy room either individually (64%) or in small groups (71%). Over 80% of participants reported they do not provide intervention in the following contexts: individual therapy at home (83%), individual therapy in the classroom (88%), and whole class instruction (82%). Participants (5%) specified other contexts of intervention including homework, in transition to therapy room, observation, and education to parents and/or caregivers at school.

Participants also reported the ideal percentage of time spent treating grammar in the previous contexts if resources were unlimited. Results are presented in Figure 11. More than half of participants reported the ideal percentage of time in individual therapy at home (64%), individual therapy in the classroom (73%), and whole class instruction (65%) would remain the same. More than half of participants reported the ideal percentage of time in small group therapy in the therapy room would decrease in comparison to current practice (58%). These participants desired an average decrease of 49%. Many participants reported they desired to increase treatment time in individual therapy in the therapy room (39%) by an average of 34% and small group therapy in the classroom (43%) by an average of 24%.

Figure 10. Elementary: Treatment Contexts

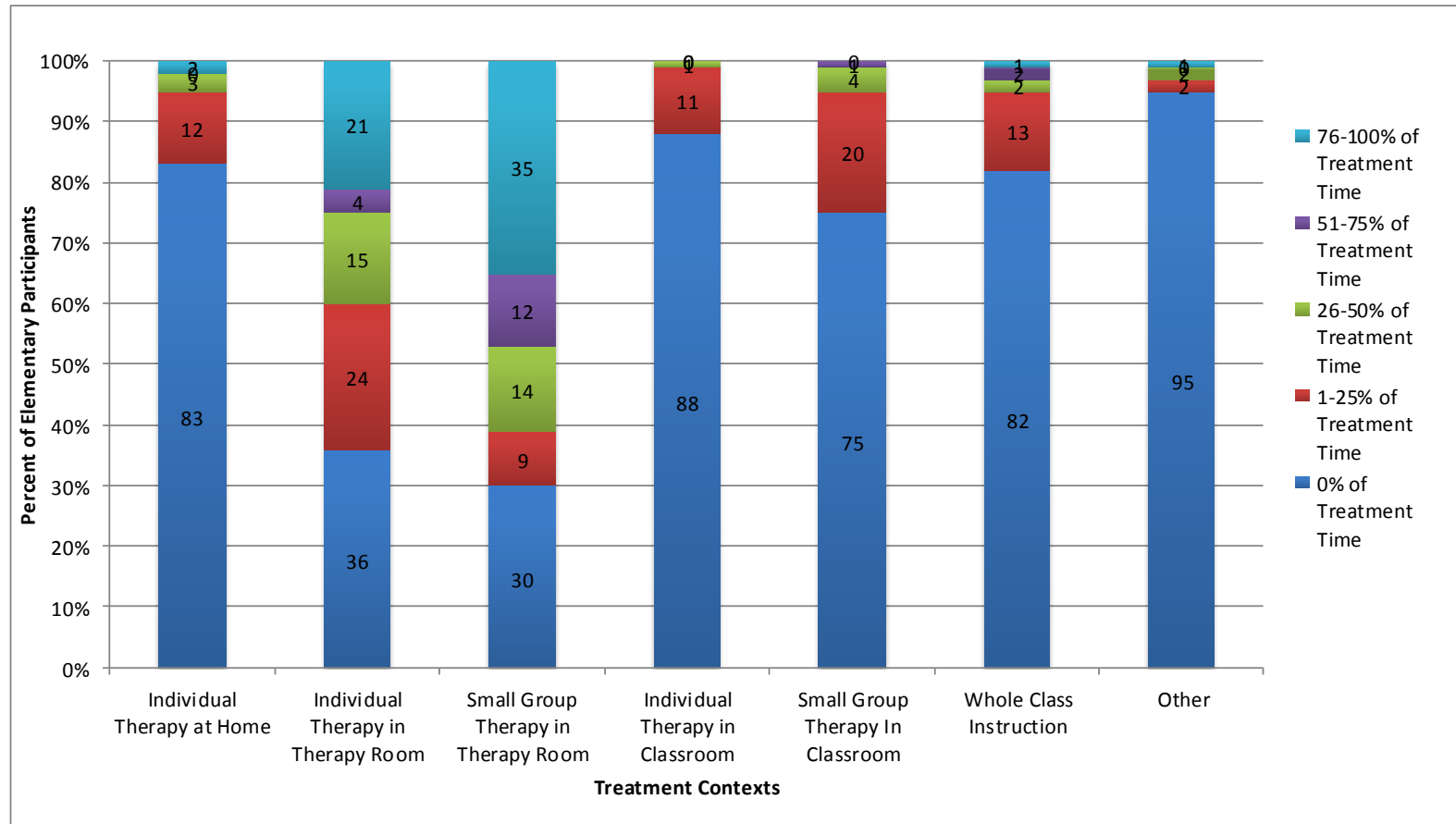
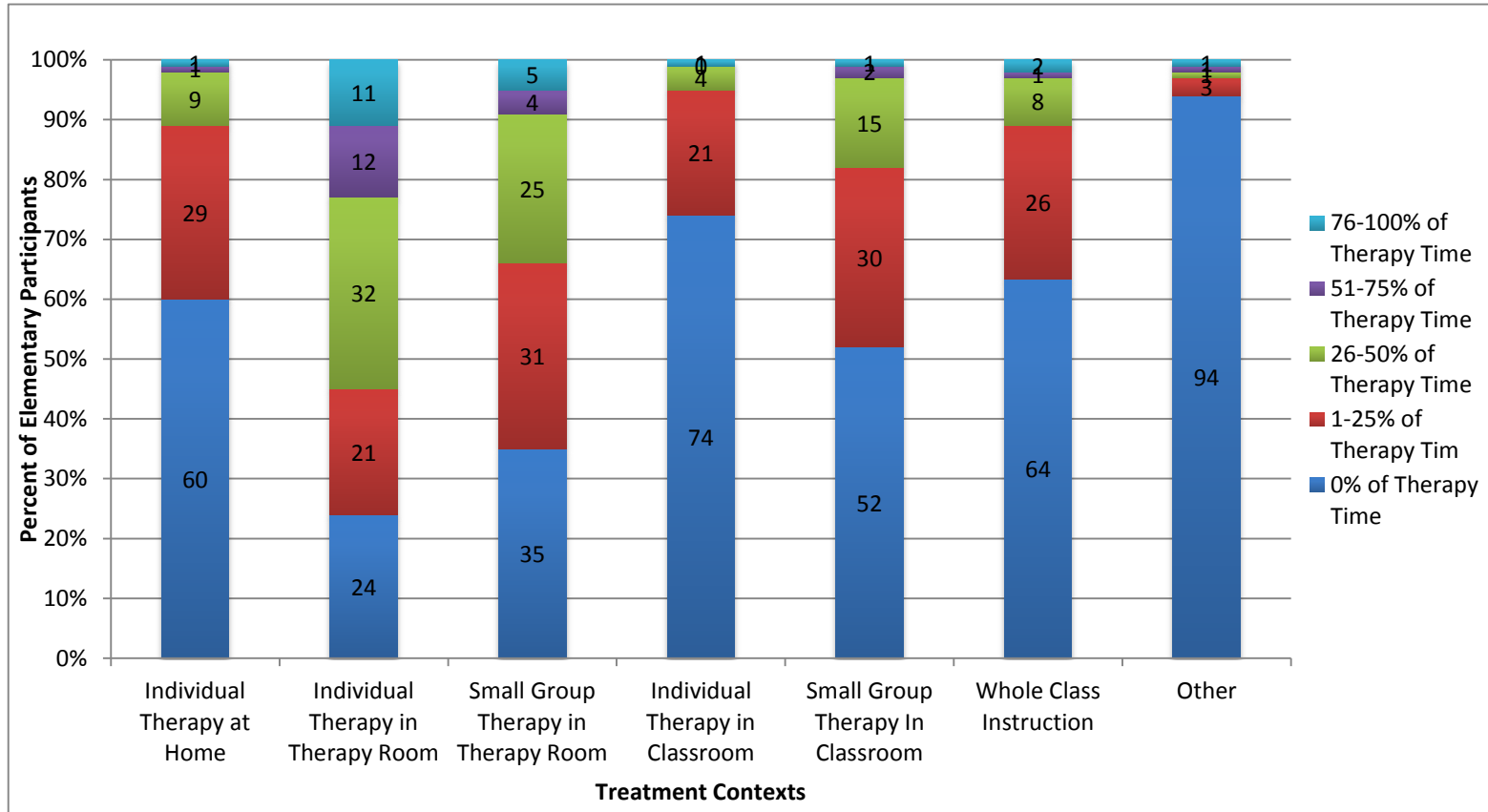


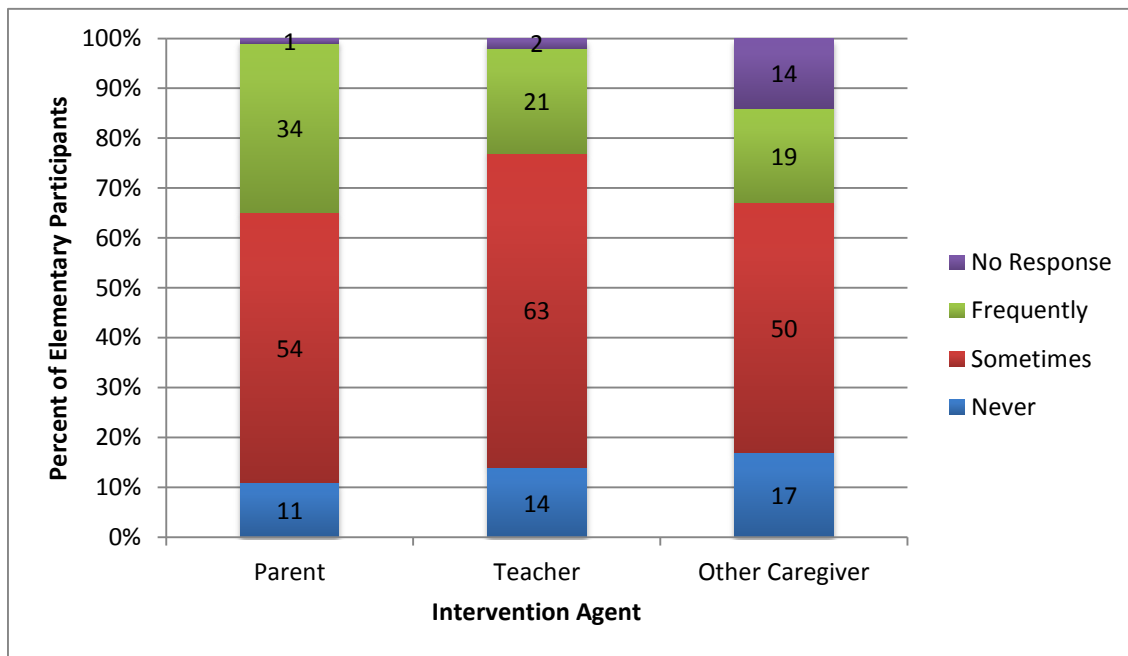
Figure 11. Elementary: Ideal Treatment Contexts





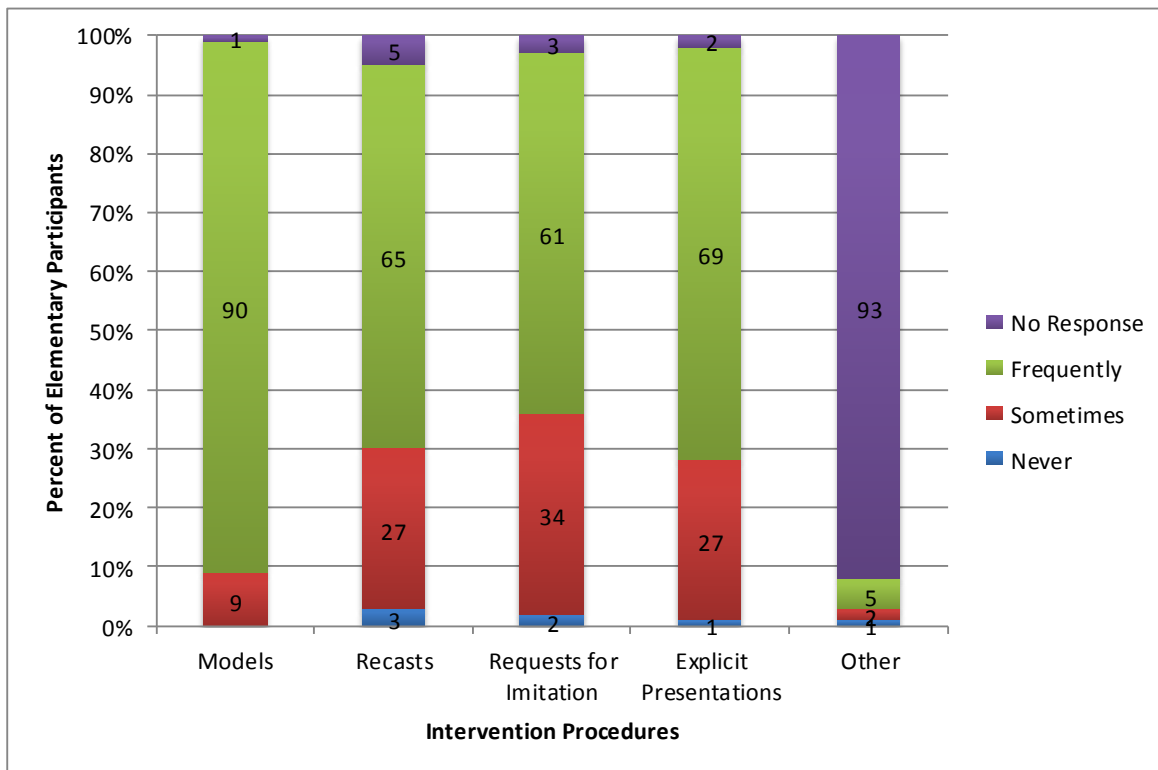
**Intervention agent.** Participants rated how frequently they coach parents, teachers, and other caregivers. Results presented in Figure 12 indicate many participants reported they sometimes coach parents (54%), teachers (63%), and other caregivers (50%). Some participants reported they never coach parents (11%) or teachers (14%).

Figure 12. Elementary Participants' Frequency Ratings: Intervention Agents



**Intervention procedures.** The frequency at which participants use each intervention procedure is presented in Figure 13. All participants reported they use modeling at least sometimes; most participants (90%) reported they frequently use modeling. More than half of participants reported they frequently use presentations (69%), recasts (65%), and requests for imitation (61%). A few participants report they never use recasts (3%), requests for imitation (2%), or explicit presentations (1%). Some participants (10%) specified other procedures used for intervention including aided language stimulation for AAC, drill, expansions, forced choice, written stimuli, scaffolding, self-recording/reflection.

Figure 13. Elementary Participants' Frequency Ratings: Therapy Procedures



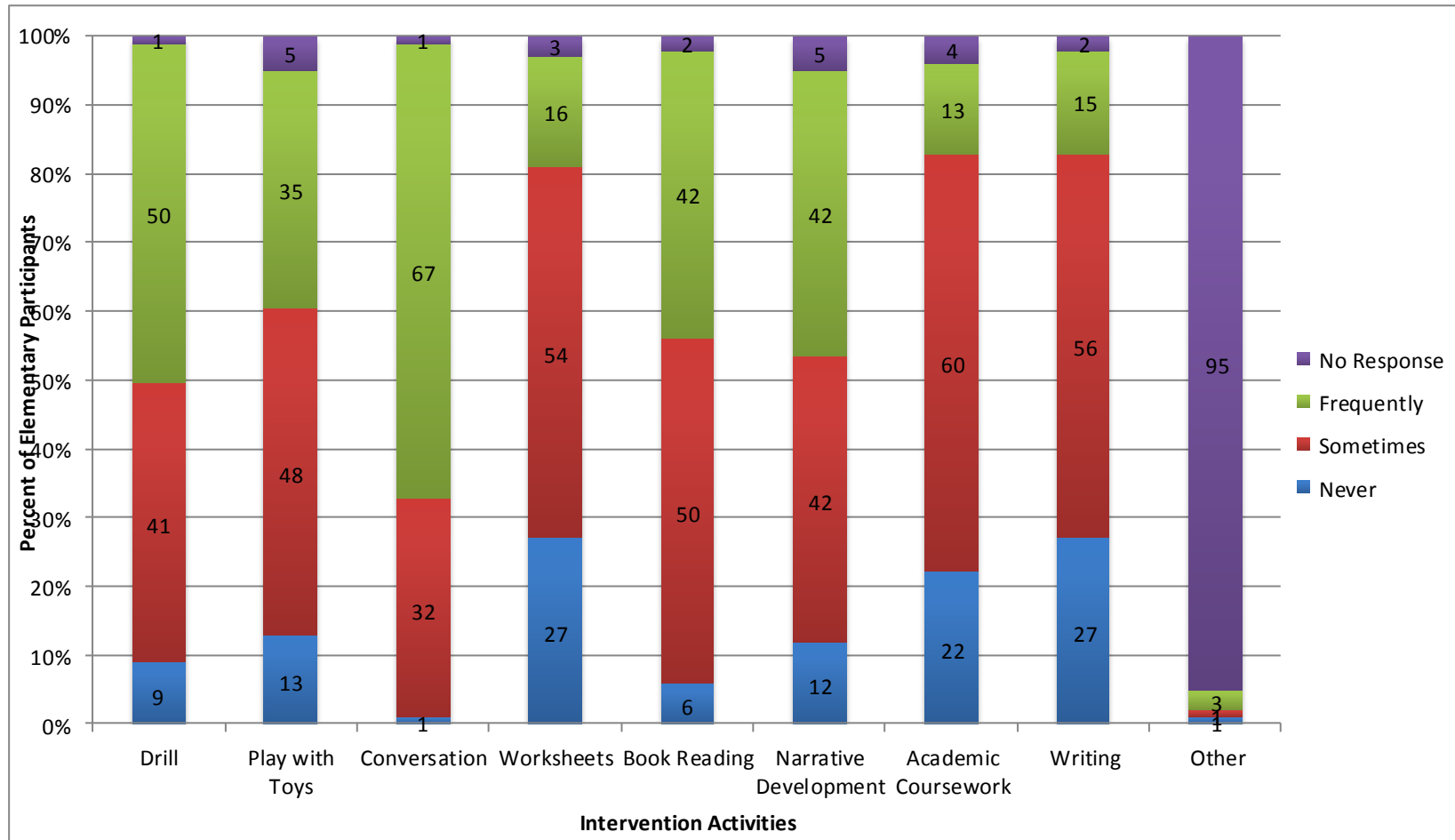
**Goal attack strategies.** The goal attack strategies reported to be used by the Elementary group participants are presented in Table 19. Participants reported they most typically use horizontal strategies (30%), cyclical strategies (23%), or a combination of strategies (34%).

Table 19. Elementary: Use of Horizontal, Vertical, and Cyclical Goal Attack Strategies

Strategy	<i>n</i>	%
Horizontal	68	30.4
Vertical	25	11.2
Cyclical	52	23.2
Combination of 2	52	23.2
Combination of 3	24	10.7
Other	3	1.3

**Intervention activities.** Participants ranked the frequency with which they use each intervention activity. Results presented in Figure 14 indicate most participants reported they sometimes or frequently use conversation (99%), book reading (94%), drill (92%), and play with toys (87%). Many participants use conversation (67%) and drill (50%) frequently. More than half of participants reported they sometimes use worksheets (54%), book reading (50%), academic coursework (60%), and writing (56%) in their interventions. Participants (6%) specified other intervention activities including using apps on the iPad, AAC, role playing, auditory processing activities, games, short movie clips, and video recordings.

Figure 14. Elementary Participants' Frequency Ratings: Therapy Activities



**Dosage.**

*Percentage of time focused on grammatical targets.* Participants reported percentage of time in a typical session focused on grammatical targets. Results presented in Table 20 indicate more than half of participants in this group (76%) reported that at least 26-50% of time in a therapy session is spent focusing on grammatical targets.

Table 20. Elementary: Percentage of Time Spent Focused on Grammatical Targets in a Typical Session

Percentage	n	%
0	0	0
1-25	51	22.8
26-50	107	47.8
51-75	37	16.5
76-100	26	11.6
Missing	3	1.3

Participants reported the ideal percentage of time focused on grammatical targets in a typical therapy session if resources were unlimited. Results are presented in Table 21. Most participants (61%) reported the ideal percentage of time would increase by an average of 26%, suggesting ideal grammar intervention would target grammar in the therapy room 51-76% of each session. Many participants (34%) reported the ideal percentage of time would remain the same. Few participants desired a decrease in percentage of treatment time focused on grammatical targets (5%).

Table 21. Elementary: Ideal Percentage of Time Spent Focused on Grammatical Targets in a Typical Session

Percentage	n	%
0	0	0
1-25	12	5.3
26-50	97	43.3
51-75	38	17.0
76-100	62	27.7
Missing	15	6.7

**Number of sessions per month.** Participants reported the number of sessions per month in which they focus on grammatical targets. Results are presented in Table 22. More than half of participants (50%) reported targeting grammatical forms in 3-4 therapy sessions per month. Few participants (8%) that they focus on grammatical targets in less than 3 therapy sessions per month. Many participants (40%) reported that they focus on grammatical targets in more than 4 sessions per month.

Table 22. Elementary: Number of Sessions per Month Spent Focused on Grammatical Targets

Number	n	%
0	0	0
1-2	18	8
3-4	113	50.4
5-6	28	12.5
7-8	42	18.8
>8	18	8
Missing	5	2.2

Participants reported the ideal number of sessions per month focused on grammatical targets if resources were unlimited. Results are presented in Table 23. Most participants (79%) reported the ideal number of sessions per month would increase in comparison to current practice by an average of 4 sessions per month, suggesting that more than 7 sessions per month would be ideal. Some participants (16%) reported the

ideal number of sessions would remain the same and a few (5%) reported it would decrease.

Table 23. Elementary: Ideal Number of Sessions per Month Spent Focused on Grammatical Targets

Number	n	%
0	1	<1
1-2	2	<1
3-4	30	13.4
5-6	24	10.7
7-8	88	39.3
>8	68	30.4
Missing	11	4.9

*Number of opportunities per session.* Participants reported the number of opportunities children on their caseload have to use grammatical targets during a typical session. Results presented in Table 24 indicate 66% of participants reported children receive more than 10 opportunities per session. Many participants (37%) reported children receive 11-20 opportunities per session.

Table 24. Elementary: Number of Opportunities per Session Spent Focused on Grammatical Targets

Opportunities	n	%
0-10	54	24.1
11-20	83	37.1
>21	86	28.4
Missing	1	<1
Total	224	

Participants reported, if resources were unlimited, the ideal number of opportunities children would have to use grammatical targets in a typical therapy session. Results are presented in Table 25. Most participants (99%) reported the ideal number of opportunities would increase by an average of 39 opportunities, suggesting the ideal

intervention would include more than 49 opportunities per session. Few participants reported an ideal number of sessions would decrease or remain the same (<1%).

Table 25. Elementary: Ideal Number of Opportunities per Session Spent Focused on Grammatical Targets

Opportunities	<i>n</i>	%
0-10	14	6.3
11-20	41	18.3
>21	156	69.6
Missing	13	5.8

***Length of session.*** Participants reported the length, in minutes, of a typical session focused on teaching grammatical targets. Results are presented in Table 26. Many participants (64%) reported sessions targeting grammatical forms last between 21 and 40 minutes.

Table 26. Elementary: Current Length of Session Spent Focused on Grammatical Targets

Length (in minutes)	<i>n</i>	%
1-20	51	22.8
21-40	144	64.3
>41	26	11.6
Missing	3	1.3

Participants reported the ideal length of session focused on grammatical targets if resources were unlimited. Results are presented in Table 27. A little less than half of the participants (43%) reported the ideal session length would remain the same. Many participants (25%) reported an ideal length of session would increase by an average of 16 minutes. A few participants (10%) reported an ideal length of the session would decrease by an average of 14 minutes.

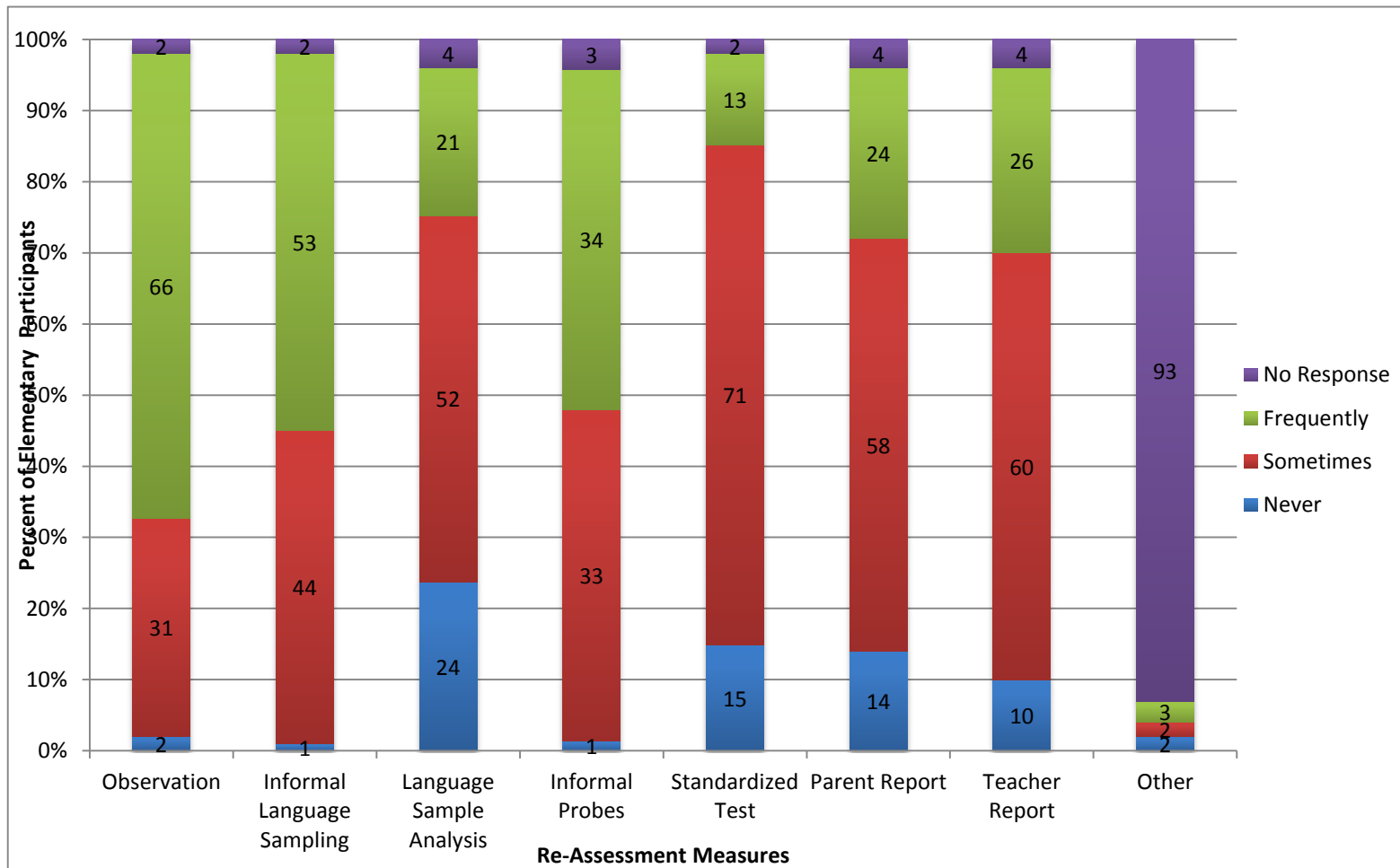


Table 27. Elementary: Ideal Length of Session Spent Focused on Grammatical Targets

Length (minutes)	<i>n</i>	%
1-20	31	13.8
21-40	99	44.2
>41	48	21.4
Missing	46	20.5

**Re-assessment.** Participants ranked the frequency with which they use each re-assessment method. Results presented in Figure 15 indicate that almost all participants reported using informal probes (>99%), informal language sampling (99%), and observation (98%) sometimes or frequently. More than half of participants reported they use the remaining tools sometimes during intervention: standardized tests (71%), teacher report (60%), parent report (58.0%), and language sample analysis (52%). Some participants (24%) report they never use formal language sample analyses. Some participants (7%) specified other tools they use to monitor progress, including work samples from class, data collection from every treatment session, data from “The Grammar Processing Program,” writing samples, narrative retell, and self-report.

Figure 15. Participants Frequency Ratings: Tools Used for Monitoring Progress in Elementary Education



*Language sample analyses.* Participants who reported that they sometimes or frequently use language sample analyses responded to a follow-up question. These participants ( $n = 162$ ) identified up to three language sample analyses used most often. Results are presented in Table 28. Most participants (86%) reported they use mean length of utterance. Many participants (33%) also reported they use type token ratio. Participants (13%) specified other types of language sample analyses used including Bloom and Lahey's model, Brown's Stages, clausal density, SALT transcription, and informal analysis.

Table 28. Language Sample Analyses Used in Elementary School

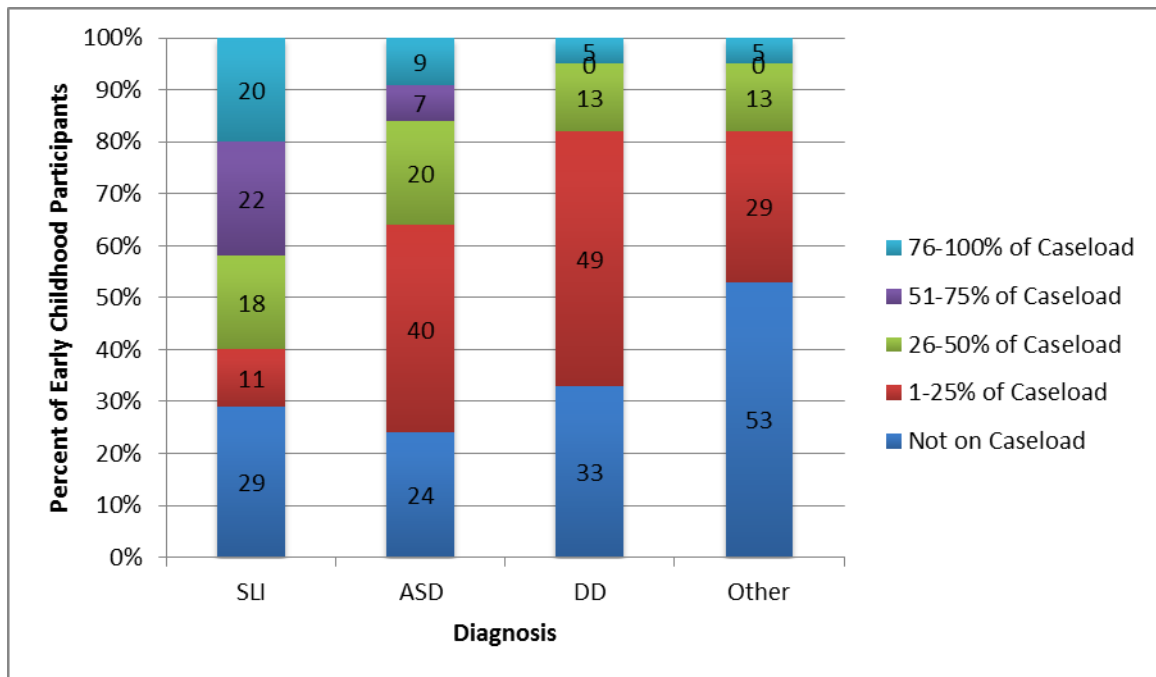
Analysis	n	%
CLAN	8	4.9
DSS	25	15.4
IPSyn	6	3.7
LARSP	16	9.9
MLU	140	86.4
TTR	53	32.7
Other	33	1.9
Sample Size	162	

*Standardized assessment.* The participants who reported they sometimes or frequently use standardized assessment to monitor progress ( $n = 84$ ) identified up to three standardized assessments used most often. More than half of participants (82%) reported they use the Comprehensive Evaluation of Language Fundamentals (CELF). Many reported they use the Comprehensive Assessment of Spoken Language (CASL) (42%) and the PLS (42%). Participants (8%) specified other standardized assessments, including the Expressive Language Test, Crowley & Baigorri School-Age Language Assessment Measures, TELD-Spanish, PLS-Spanish, Test of Narrative Language (TNL), Test of Written Language, and Test of Early Written Language. See Appendix for table.

## Middle/High School

**Caseload diagnoses.** Figure 16 presents the proportionate diagnoses of the individuals on the caseloads of participants in the Middle/High School group. The figure indicates that the majority of participants reported that at least some of their caseload can be characterized as having SLI (71%) ASD (76%) or a DD (67%).

Figure 16. Middle/High School: Caseload Diagnoses



**Intervention targets.** Results presented in Table 29 indicate the five most common grammatical targets for children in middle/high school are expanding utterances (67%), other specified goals (60%), regular and irregular past tense (51%), plural –s (27%), and pronouns (18%). Other goals specified include synonyms, idioms, mental state verbs, pragmatics, adverbs, synonyms, use of visual schedule, and alternative augmentative communication.

Table 29. Middle/High School: Grammatical Intervention Targets

Targets	<i>n</i>	%
Expanding Utterances	30	67
Other	27	60
Regular + Irregular Past Tense	23	51
Plural –s	12	27
Pronouns	8	18
Questions	7	16
Adjectives	7	16
Verbs (Non-Specific)	6	13
Syntax (Non-Specific)	4	9
Prepositions	3	7
Auxiliary verbs	3	7
Irregular Verbs (Non-Specific)	3	7
Present Progressive Verbs	2	4
Copula ‘be’	2	4
Regular and Irregular Third Person	2	4
Possessive –s	1	2
Articles ‘a’ ‘an’ ‘the’	1	2
Negatives	1	2
Nouns	0	0

**Intervention contexts.** Intervention context results presented in Figure 17 indicate that more than half of participants (67%) reported they spend some percentage of time in small group settings in the therapy room. Several participants reported they spend at least some percentage of time providing individual intervention in the therapy room (42%) and small group therapy in classroom (38%). Some participants (9%) specified other contexts of intervention including the hallway, in the community, and in tutoring.

Results of participants' ideal treatment contexts are presented in Figure 18. More than half of participants reported ideal treatment time in individual therapy at home (71%), individual therapy in classroom (80%), and whole class instruction (64%) would remain the same. A little less than half of participants (49%) reported the ideal percentage of time in small group therapy in the therapy room would decrease by an average of 45%. Many participants reported increases in the ideal percentage of treatment time in individual therapy in the therapy room (38%) by 35% and small group therapy in the classroom (38%) by 29%.

Figure 17. Middle/High School: Treatment Contexts

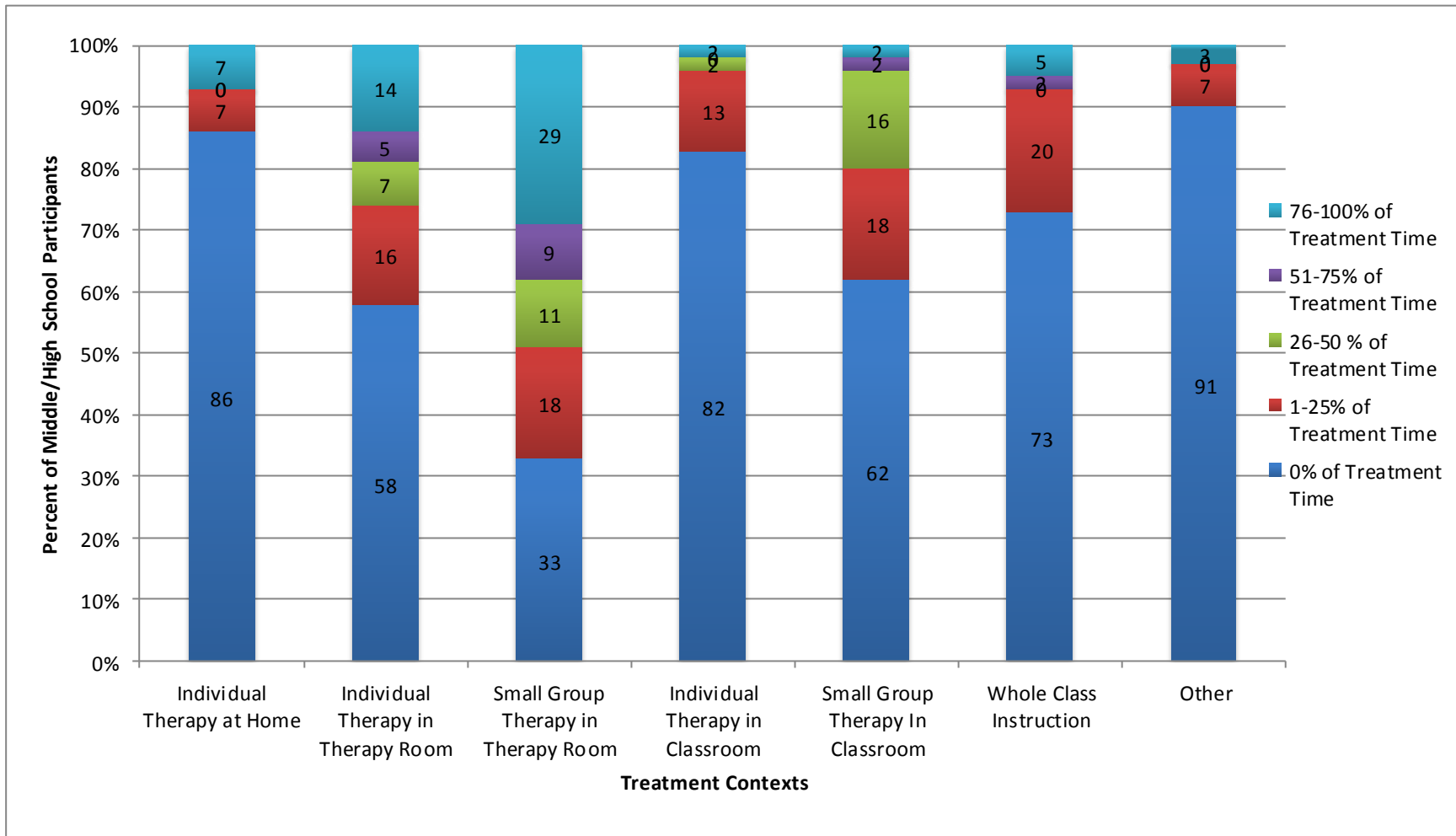
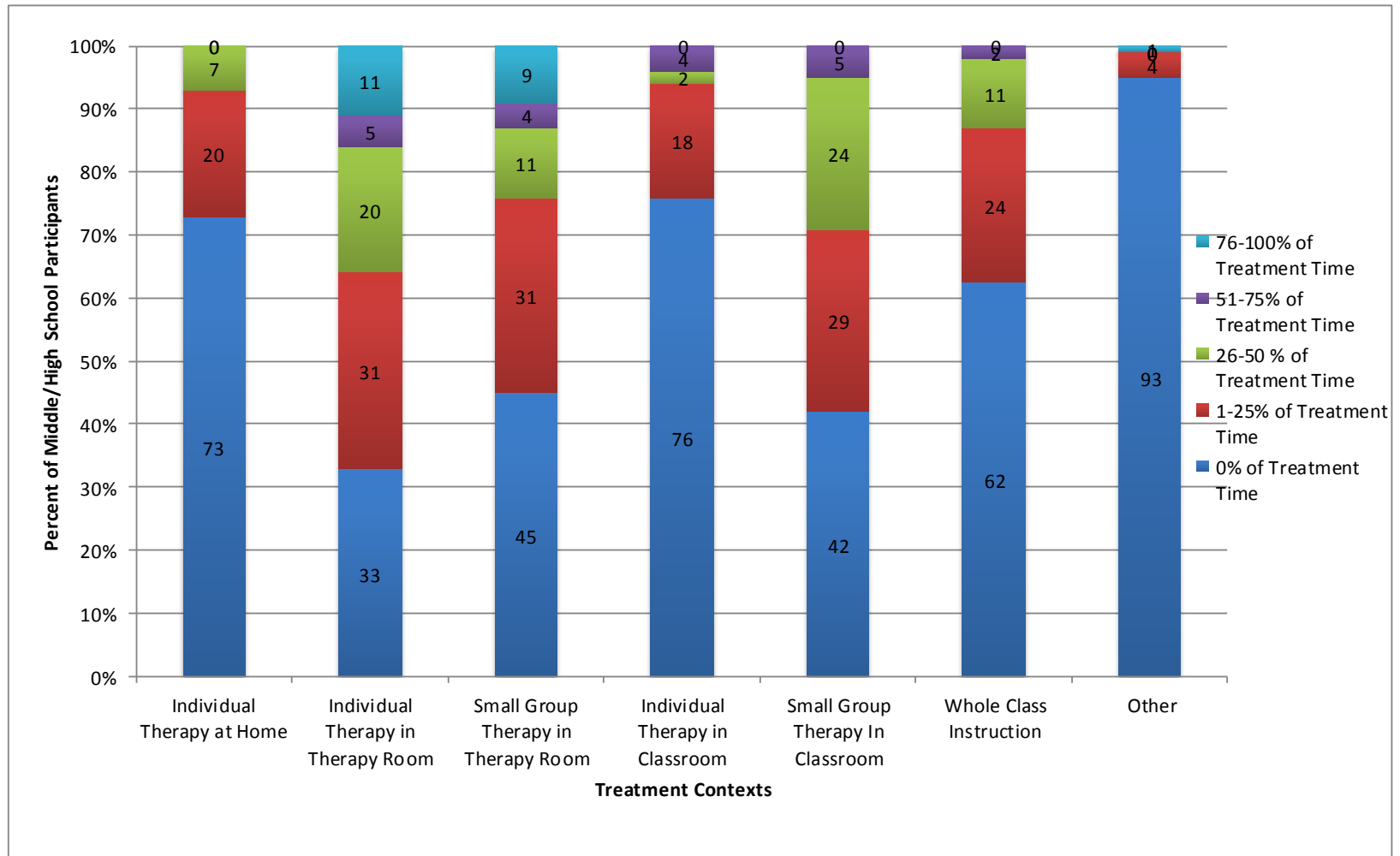


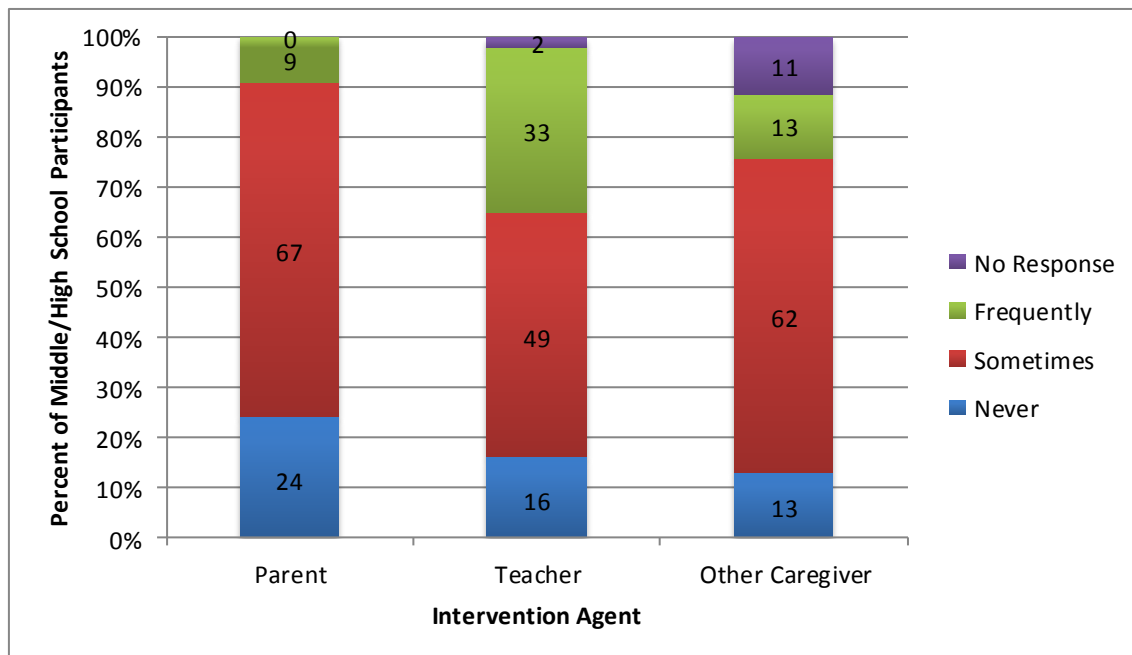
Figure 18. Middle/High School: Ideal Treatment Contexts





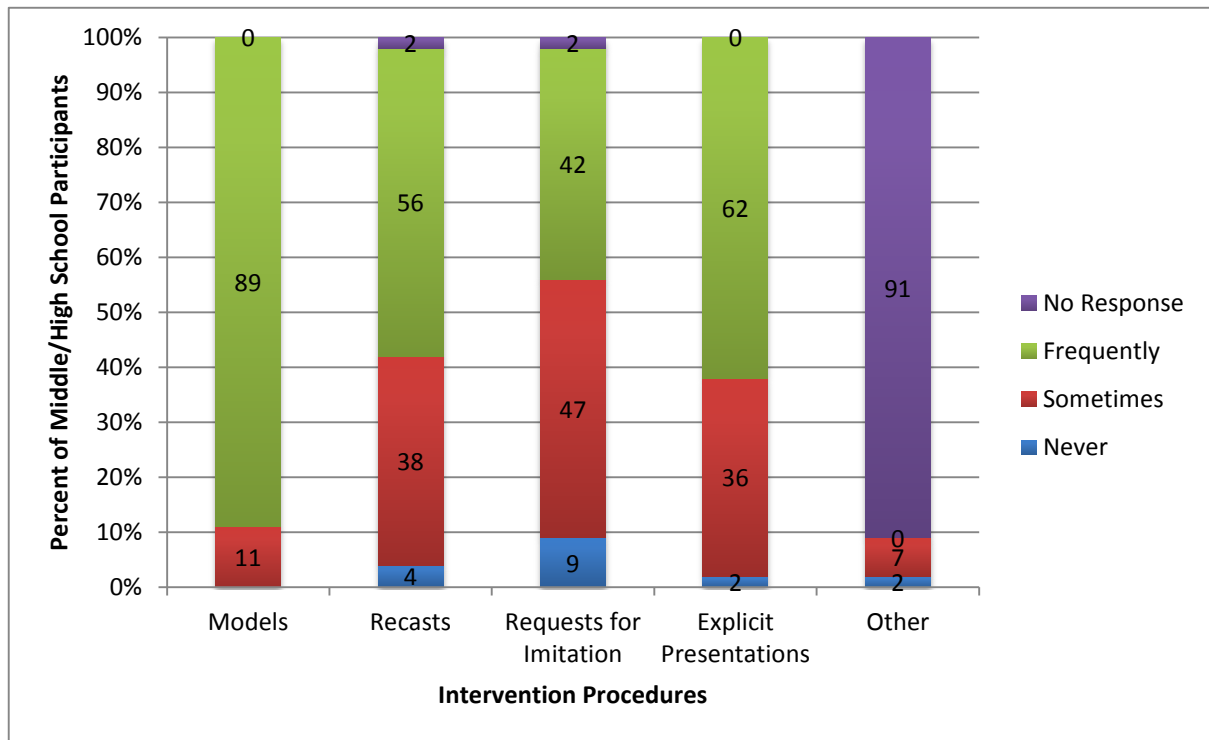
**Intervention agents.** Participants rated how frequently they coach parents, teachers, and other caregivers. Results presented in Figure 19 indicate a majority of participants reported they sometimes coach parents (67%), teachers (49%), and other caregivers (62%). Several participants reported they frequently coach teachers (33%). Only 9% of participants reported they frequently coach parents.

Figure 19. Middle/High School Clinician’s Frequency Ratings: Intervention Agents



**Intervention procedures.** Results of the intervention procedures used presented in Figure 20 indicate that all participants reported they use modeling at least sometimes and most (89%) report frequently using modeling. More than half of participants reported they frequently use explicit presentations (62%) and recasts (56%). Many participants (42%) reported that they only sometimes use requests for imitation. Some participants (13%) specified other intervention procedures, including rehearsal, sentence strips, and sentence completion.

Figure 20. Middle/High School Participants' Frequency Ratings: Therapy Procedures



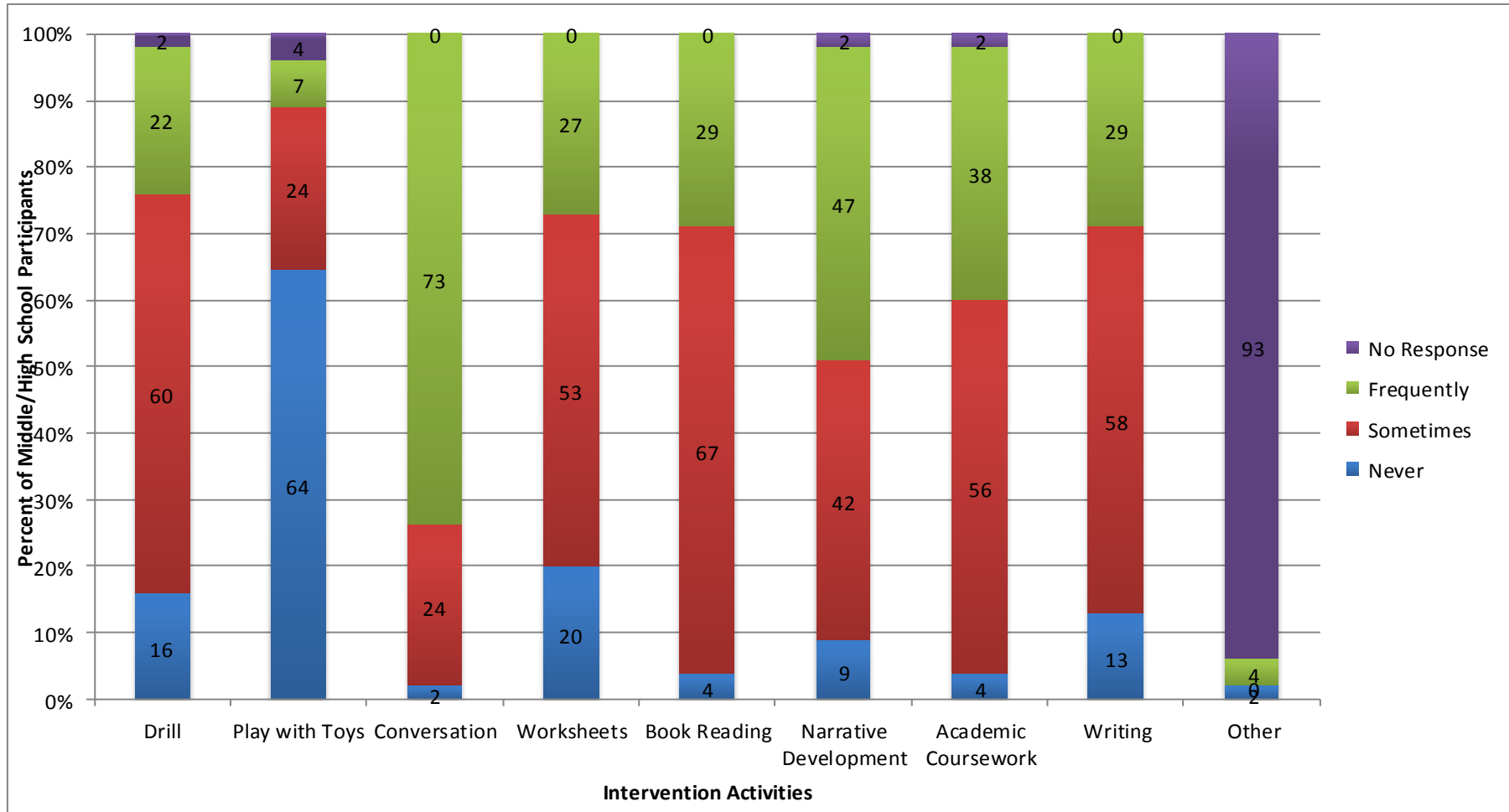
**Goal attack strategies.** Results of the goal attack strategies that participants typically use to treat grammatical forms are presented in Table 30. Many participants reported they are using horizontal strategies (38%), cyclical strategies (22%), or a combination of strategies (22%).

Table 30. Middle/High School: Use of Horizontal, Vertical, and Cyclical Goal Attack Strategies

Strategy	Middle/High School	
	<i>n</i>	%
Horizontal	17	37.8
Vertical	3	6.7
Cyclical	10	22.2
Combination of 2	10	22.2
Combination of 3	2	4.4
Other	3	6.7
Missing	0	0

**Intervention Activities.** Results of activities used for intervention presented in Figure 21 indicate that most participants reported they sometimes/frequently use conversation (98%), book reading (96%), academic coursework (96%), and narrative development (90%). More than half of participants (73%) reported they use conversation frequently. Some participants (9%) specified other intervention activities, including using AAC, functional activities of daily living (e.g., writing a letter), educational games, and the internet.

Figure 21. Middle/High School Participants' Frequency Ratings: Intervention Activities



**Dosage.**

*Percentage of time focused on grammatical forms.* Participants reported the percentage of time in a typical session focused on grammatical targets. Results presented in Table 31 indicate that 67% of participants reported that 26-50% of time in a therapy session is spent working on grammatical forms. A few participants (13%) reported that they target grammatical forms greater than 50% of the time.

Table 31. Middle/High School: Percentage of Time Spent Focused on Grammatical Targets in a Typical Session

Percentage	<i>n</i>	%
0	0	0
1-25	15	33.3
26-50	24	53.3
51-75	3	6.7
76-100	3	6.7
Missing	0	0

Results of participants' reported ideal percentage of time focused on grammatical targets in a typical therapy session are presented in Table 32. More than half of participants (56%) reported the ideal percentage of time would increase by an average of 32%, suggesting grammatical targets would be targeted 58-82% of the time. Many participants (36%) reported the ideal percentage would remain the same and a few (9%) reported that the ideal percentage of time would decrease.

Table 32. Middle/High School: Ideal Percentage of Time Spent Focused on Grammatical Targets in a Typical Session

Percentage	<i>n</i>	%
0	0	0
1-25	8	17.8
26-50	23	51.1
51-75	5	11.1
76-100	9	20.0
Missing	0	0

*Number of sessions per month.* Participants reported the number of sessions per month in which they focus on grammatical targets. Results are presented in 33.

Approximately half of participants (53%) reported that they target grammatical forms in 3-4 therapy sessions per month. Several participants (20%) reported that they focus on grammatical targets in less than 3 therapy sessions per month and several participants (27%) reported that they focus on grammatical targets in more than 4 sessions per month.

Table 33. Middle/High School: Number of Sessions per Month Spent Focused on Grammatical Targets

Number	<i>n</i>	%
0	0	0
1-2	9	20
3-4	24	53.3
5-6	5	11.1
7-8	3	6.7
>8	4	8.9
Missing	0	0

Participants' reported ideal number of sessions per month focused on grammatical targets. Results are presented in Table 34. Most participants (69%) reported the ideal number of sessions would increase by an average of 4 sessions, suggesting that ideally intervention would focus on grammatical targets in more than 7 sessions a month. Several participants (22%) reported the ideal number of sessions would remain the same and a few (8%) reported the ideal number of sessions would decrease (8%).

Table 34. Middle/High School: Ideal Number of Sessions per Month Spent Focused on Grammatical Targets

Number	Middle/High School	
	<i>n</i>	%
0	0	0
1-2	1	2.2
3-4	18	40.0
5-6	4	8.9
7-8	13	28.9
>8	9	20.0
Missing	0	0

**Number of opportunities per session.** Participants reported the number of opportunities children on their caseload have to use grammatical targets during a typical session. Results presented in Table 35 indicate that 62% of participants reported that children receive more than 10 opportunities per session. Just under half of the participants (44%) reported that their students receive 11-20 opportunities per session.

Table 35. Middle/High School: Number of Opportunities per Session Spent Focused on Grammatical Targets

Opportunities	<i>n</i>	%
0-10	17	37.8
11-20	20	44.4
>21	8	17.8
Missing	0	0

Participants reported the ideal number of opportunities children would have to use grammatical targets in a typical therapy session if resources were unlimited. One participant reported the ideal number of opportunities would remain the same. Almost all participants (97%) reported the ideal number of opportunities would increase in comparison to current practice by an average of 25 opportunities.

Table 36. Middle/High School: Ideal Number of Opportunities per Session Spent Focused on Grammatical Targets

Opportunities	<i>n</i>	%
0-10	9	20.0
11-20	13	28.9
>21	22	48.9
Missing	1	2.2
Total	45	

***Length of session.*** Participants reported the length, in minutes, of a typical session focused on teaching grammatical targets. Results presented in Table 37 indicate that about half of the participants (53%) reported sessions lasting between 21 and 40 minutes.

Table 37. Middle/High School: Current Length of Session Spent Focused on Grammatical Targets

Length (minutes)	Middle/High School	
	<i>n</i>	%
1-20	14	31.1
21-40	24	53.3
>41	7	15.6
Missing	0	0
Total	45	

Most participants reported that the ideal length of session would either increase (47%) or remain the same (42%) in comparison to current practice. Those desiring to increase the length of session reported an average increase of 14 minutes, suggesting an ideal intervention time of 35-44 minutes. The few participants that desired to decrease (11%) reported an average decrease of 11 minutes.

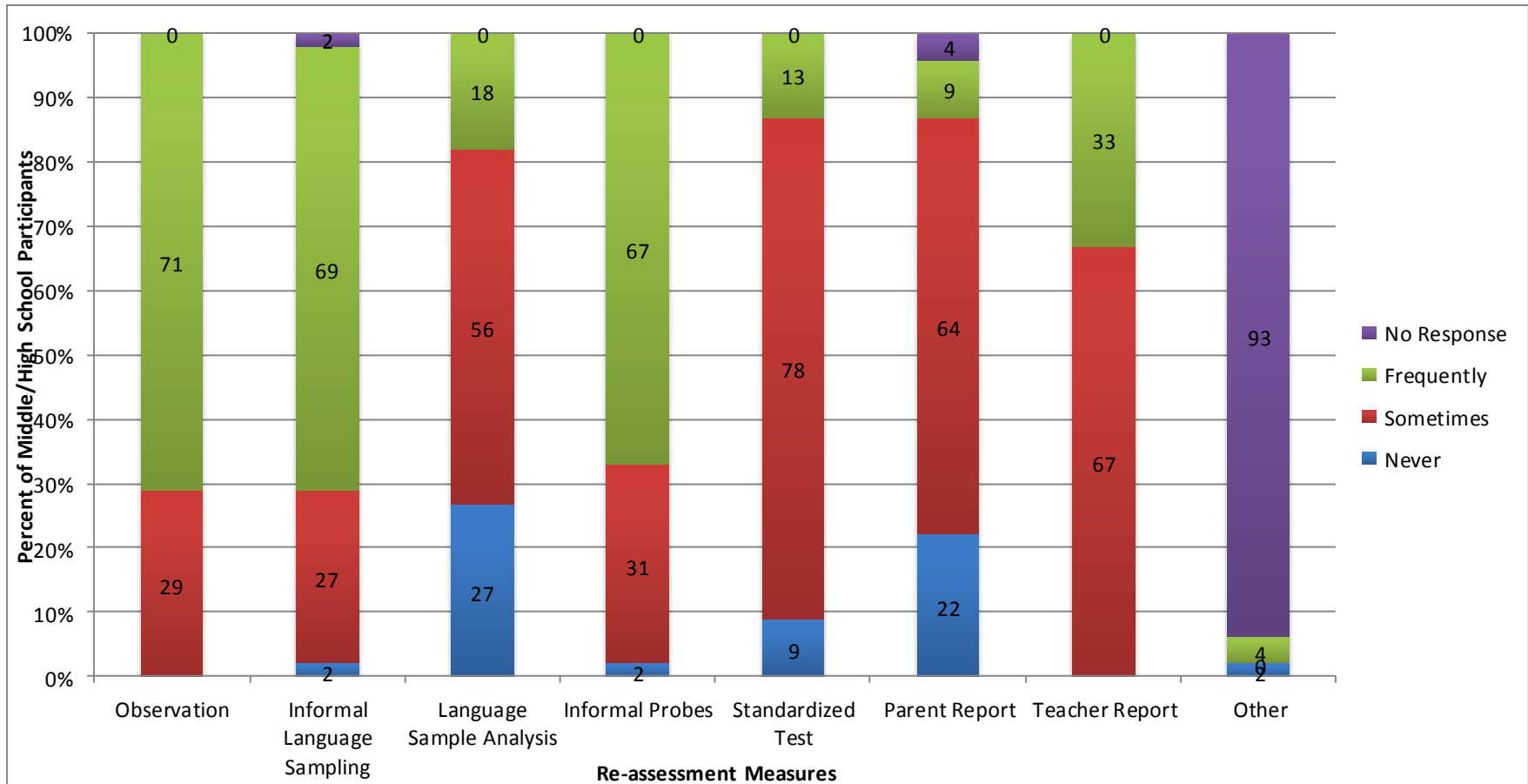


Table 38. Middle/High School: Ideal Length of Session Spent Focused on Grammatical Targets

Length (in minutes)	Middle/High School	
	<i>n</i>	%
1-20	6	13.3
21-40	17	37.8
>41	13	28.9
Missing	9	20.0

**Re-assessment.** Results of the frequency of use of each assessment, presented in Figure 22, indicate most participants reported they use observation (100%), informal language sampling (98%), and informal probes (98%) sometimes or frequently to monitor progress. Over half of participants reported they frequently use observation (71%), informal language sampling (69%), and informal probes (67%). Many participants reported they sometimes use standardized tests (78%), parent report (64%), and teacher report (67%). Several participants reported they never use formal language sample analyses to monitor progress (27%). A few participants (7%) specified data collection from every treatment session as another tool they use to monitor progress.

Figure 22. Middle/High School Participants' Frequency Ratings: Methods of Re-Assessment



**Language sample analyses.** The participants who reported that they sometimes or frequently use language sample analyses ( $n = 74$ ) identified up to three language sample analyses used most often. These results are presented in Table 39. The most commonly reported language analyses used with middle/high school aged students were mean length of utterance (36%) and Developmental Sentence Scoring (DSS) (21%). Participants (16%) specified other types of language sample analyses used including SALT transcription and informal analysis.

Table 39. Language Sample Analyses Used in Middle/High School

Analyses	$n$	%
CLAN	8	4.9
DSS	25	15.4
IPSyn	6	3.7
LARSP	16	9.9
MLU	140	86.4
TTR	53	32.7
Other	33	1.9

**Standardized assessment.** The participants who reported that they sometimes or frequently use standardized assessment to monitor progress ( $n = 91$ ) identified up to three standardized assessments used most often. More than half of participants (76%) reported they use the Comprehensive Evaluation of Language Fundamentals (CELF). Many participants reported they use the CASL (49%) and the Oral and Written Language Scales (OWLS) (44%). Participants (7%) specified other standardized assessments including the Test of Problems Solving (TOPS). See table in Appendix for results.

## **Discussion**

The primary aim of this study was to determine how currently practicing speech-language pathologists are implementing interventions for children focused on grammatical targets. We examined implementation of each component included in the intervention hierarchy presented by McCauley and Fey (2006). The secondary aim was to determine if and how currently practicing speech-language pathologists would alter grammatical intervention if resources were unlimited. Specifically, we asked about changes in context and dosage. To address these aims, we created an online survey for currently practicing speech-language pathologists with questions examining each component of the McCauley and Fey intervention hierarchy, including: goals, contexts, procedures, goal attack strategies, activities, dosage, and methods of re-assessment. Below, we summarize our results for three groups of clinicians: Early Education, Elementary, and Middle/High School.

### **Early Education**

Participants primarily working with children in early education reported to most commonly focus on the grammatical targets plural /s/, present progressive verbs, regular and irregular past tense, pronouns, and possessive –s. Participants reported language intervention takes place primarily in individual intervention in the therapy room and home. Most participants reported no change in desired percentage of time in most intervention contexts; however, many participants reported an ideal intervention time in individual therapy at home would increase by an average of 33%. Participants in this age group most desired to decrease intervention time in individual therapy in the therapy

room by an average of 38%. Early Education participants reported that they most frequently coach parents and use intervention procedures including modeling, recasting, and requesting imitation. Goals are targeted using horizontal, cyclical, and a combination of goal attack strategies. Common intervention activities for this age group include play with toys, conversation, and book reading.

More than half of participants working with children in early education reported they focus on grammar targets at least 26-50% of every session, in more than 3 sessions a month, and most often for a typical session length of 21-40 minutes. Participants reported ideal grammar intervention would increase in percentage of time focused on grammatical targets to 50-75% of the treatment session, number of sessions per month to more than 7 sessions per month, and number of opportunities per session to more than 46 opportunities per session. Most participants' desired length of session remained the same, 21-40 minutes. Our results indicated, re-assessment for this age group most frequently occurs using observation and informal language sampling.

### **Elementary**

Participants primarily working with children in elementary-aged students reported focusing on grammatical targets including regular and irregular past tense, pronouns, plural -s, expanding utterances, and present progressive verbs. Participants reported intervention takes place primarily in the therapy room in both individual and small group contexts. Most participants desired to decrease treatment time in small group settings in the therapy room by an average of 49%. Many participants desired to increase individual therapy in the therapy room by an average of 34% and small group therapy in

the classroom by an average of 43%. Most participants reported they sometimes coach parents, teachers, and other caregivers, although not frequently. Participants most frequently use modeling, explicit presentations, and recasts using cyclical, horizontal, and a combination of goal attack strategies. The most common intervention activities for this age group include: conversation, book reading, and drill.

More than half of the Elementary participants reported that at least 26-50% of time in a therapy session is spent focusing on grammatical targets, in more than 3 sessions per month, and most often for a typical session length of 20-40 minutes. Participants reported ideal intervention would include an increase in percentage of time spent targeting grammatical forms to 51-76%, number of sessions per month to greater than 7, and number of opportunities per session to more than 49. Many participants reported that the ideal session length would remain the same (21-40 minutes). Our results for this age group indicated re-assessment most frequently occurs using observation and informal language sampling.

### **Middle/High School**

Participants primarily working with children in middle/high school reported to most commonly focus on expanding utterances, other specified goals, regular and irregular past tense, plural –s, and pronouns. Participants reported that intervention takes place primarily in small group intervention in the therapy room. Most participants indicated no desire to change the percentage of treatment time in most contexts; however, many participants reported that the percentage of treatment time in small group therapy in the therapy room would decrease in comparison to current practice by an average of 45%.

Most participants in middle/high school reported they sometimes coach parents, teachers, and other caregivers, although several participants reported that they never coach parents. Participants in this age group most frequently use modeling, explicit presentations, and recasts using horizontal, cyclical, or a combination of goal attack strategies. Participants in this group most commonly reported to use conversation, book reading, and academic coursework activities.

More than half of participants working with children in middle/high school reported that more than 26-50% of time in a therapy session is focused on grammatical targets, in more than 3 sessions per month, with a typical session lasting between 21-40 minutes. Participants reported that ideally intervention would increase in percentage of treatment time focused on grammatical targets to 58-82% of time, number of sessions per month to more than 7 sessions a month, and number of opportunities per session to more than 35. About half of participants desired to increase the length of treatment sessions while the other half desired session length remain the same. Participants that reported a desired increase desired to increase the length of session to 35-44 minutes. Our results for this age group indicate re-assessment most frequently occurs using observation, informal language sampling, and informal probes.

### **Study Limitations**

For both the Early Education and Elementary age groups, our study included relatively large samples (greater than 100). Only 45 participants worked primarily with middle/high school age groups. Thus, it is difficult to draw conclusions about current practice regarding intervention components with a small representation of middle/high

school speech-language pathologists. However, in general there is very little research regarding language intervention for this age group. Thus, our survey result provide valuable information for clinicians and researchers.

The use of a survey allowed us to look at a large group of individuals, on a national level. However, survey methodology allows for bias and inaccurate self-reporting. Direct observation of currently practicing speech- language pathologists would allow for a more accurate depiction of how the components of grammar intervention are being implemented clinically.



## **Conclusion**

As researchers continue to investigate the effectiveness of child language interventions and the specific intervention components described by McCauley and Fey (2006), it is essential to have a strong understanding of current practice. When developing grammatical interventions, it is important each intervention component is feasible such that clinicians would be able to implement the newly developed intervention in clinical practice. Information from this study can be used to guide the development and evaluation of grammatical approaches for children in the future.

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## Appendix

### Consent Information Sheet

#### Approaches to Child Grammar Intervention by Speech-Language Pathologists

You are invited to be in a research study examining the current practice for teaching grammatical forms to children with language impairment. You are eligible to participate in this study if you are a certified speech-language pathologist (SLP) and currently teaching grammatical forms to at least one child on your caseload. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

This study is being conducted by Lizabeth H. Finestack, Ph.D., CCC-SLP (Finestack@umn.edu) and Kayla Vik, B.A. (vikxx029@umn.edu) of the Department of Speech-Language-Hearing Sciences at the University of Minnesota.

#### Background Information

Teaching grammatical forms is a common practice for SLPs, as most children with language impairment have some difficulty with this area of language. Research indicates that current grammatical treatment approaches for children with language impairment yield only moderately significant gain. The Child Language Intervention Lab is working to develop more successful grammatical treatment approaches. As part of this development process, it is important to better understand the current practice for teaching grammatical forms.

#### Procedures

If you agree to be in this study, we would ask you to complete a survey that includes a set of demographic questions, questions concerning your caseload, and questions regarding the speech-language services you provide. The online survey is available through a secure website. The survey should take no more than 15 minutes to complete and can be completed at your leisure.

#### Risks and Benefits of Being in the Study

You may feel uncomfortable when answering specific questions on this survey. We encourage you to skip questions that you do not feel comfortable answering. There are no benefits to participating in this study.

#### Compensation

At the end of the survey, you will have the option to be entered into a drawing for a \$50 Amazon gift card. For every 50 participants who complete the survey and choose to be entered into a drawing, one name will be drawn. This person will be emailed the gift card. Up to 6 people will receive a gift card.

### **Confidentiality**

The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a subject. Research records will be stored securely and only researchers will have access to the records. Study data will be encrypted according to current University policy for protection of confidentiality.

### **Voluntary Nature of the Study**

Participation in this study is voluntary. Your decision whether or not to participate will not affect your current or future relations with the University of Minnesota. If you decide to participate, you are free to not answer any of the survey questions or stop the survey at any time without affecting those relationships.

### **Contacts and Questions**

The researchers conducting this study are Lizbeth H. Finestack, Ph.D., CCC-SLP (Finestack@umn.edu) and Kayla Vik, B.A. (vikxx029@umn.edu) in the Department of Speech-Language-Hearing Sciences at the University of Minnesota. You are encouraged to contact the researchers before you begin the survey or at any other time if you have any questions.

If you have any questions or concerns regarding this study and would like to talk to someone other than the researchers, you are encouraged to contact the Research Subjects' Advocate Line, D528 Mayo, 420 Delaware St. Southeast, Minneapolis, Minnesota 55455; (612) 625-1650.

### **Statement of Consent**

I have read the above information. I have asked questions and have received answers. I consent to participate in the study. Statement of Consent: I have read the above information. By clicking on the consent button below, I consent to participate in the study.

- I consent to participate in this study. (1)
- I do not consent to participate in this study. (you will be exited from this study) (2)

### **Survey**

Prac1 Are you currently practicing speech-language pathology and serving children 0 through 21 years of age?

- Yes (1)
- No (2)

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



ClinTime1 What percent of your clinical time is spent in each setting? The total should equal 100%.

% of Clinical Time (1)

- Early Childhood (Birth-3) (1)
- Preschool/ECSE (2)
- Elementary School (3)
- Junior High/ Middle School (4)
- High School (5)
- Medical Setting (6)
- Clinic Setting (not private practice) (7)
- Private Practice (8)
- University Clinic (9)
- Other - Specify: (10)

ClinTime2 How many students are currently on your caseload?

- 1-15 (1)
- 16-30 (2)
- 31-45 (3)
- 46-60 (4)
- 61-75 (5)
- 76+ (6)

CTDisp What age range represents the largest percentage of your caseload?

- Early Childhood (0-3 years) (1)
- Pre-School (~3-5 years) (2)
- Elementary School (~5-10 years) (3)
- Middle School (~11-13 years) (4)
- High School (~14-21 years) (5)
- Other (6)

ClinTime3 Approximately what percentage of your caseload is in each of these age ranges? The total should equal 100%.

% of Your Caseload (1)

- Early Childhood (0-3 years) (1)
- Pre-School (~3-5 years) (2)
- Elementary School (~5-10 years) (3)
- Middle School (~11-13 years) (4)
- High School (~14-21 years) (5)
- Other (6)

ClinTime4 For each age group, what percentage of children on your caseload are expressively verbal and produce at least 2-word utterances?

% of Your Caseload (1)

- Early Childhood (0-3 years) (1)
- Pre-School (~3-5 years) (2)
- Elementary School (~5-10 years) (3)
- Middle School (~11-13 years) (4)
- High School (~14-21 years) (5)
- Other (6)

ClinTime5 For each age group, what percentage of children on your caseload do you target expressive use of grammatical forms?

% of Your Caseload (1)

- Early Childhood (0-3 years) (1)
- Pre-School (~3-5 years) (2)
- Elementary School (~5-10 years) (3)
- Middle School (~11-13 years) (4)
- High School (~14-21 years) (5)
- Other (6)

ClinTime6 For your  $\{q://QID38/ChoiceGroup/SelectedChoices\}$  caseload, what percent of children with at least one grammatical treatment goal fall into each of the following diagnostic categories? The total should equal 100%.

% of Your Caseload (1)

- Specific/ Primary Language Impairment (1)
- Autism Spectrum Disorder (2)
- Other Development Disability (3)
- Other Diagnosis (4)

ClinTime7 For your  $\{q://QID38/ChoiceGroup/SelectedChoices\}$  caseload, list five grammatical forms that you most frequently target in therapy.

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

ClinTime8 For your \${q://QID38/ChoiceGroup/SelectedChoices} caseload, 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, 3rd person singular –s, pronouns I, she, they; conjunctions and, or, but).

ClinTime9 For your \${q://QID38/ChoiceGroup/SelectedChoices} caseload, in a typical session targeting grammar development, approximately how many opportunities to learn grammatical targets does a child receive?

- 0-5 (1)
- 6-10 (2)
- 11-20 (3)
- 21-50 (4)
- >50 (5)

ClinTime10 For your \${q://QID38/ChoiceGroup/SelectedChoices} caseload, what is the length of a typical session targeting grammar development? (in minutes)

ClinTime11 For your \${q://QID38/ChoiceGroup/SelectedChoices} caseload, in approximately how many sessions per month do you target grammatical forms?

ClinTime12 For your \${q://QID38/ChoiceGroup/SelectedChoices} caseload, if resources were unlimited, what would be the ideal dosage for direct, SLP-delivered treatment of grammatical forms?

- % of session (1)
- Length of session (2)
- Teaching opportunities per session (3)
- Sessions per month (4)

ClinTime13 For your \${q://QID38/ChoiceGroup/SelectedChoices} caseload, 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 (1)

- One-on-one at home (1)
- One-on-one in therapy room (2)
- Small group in therapy room (3)
- One-on-one in classroom (4)
- Small group in classroom (5)
- Whole class instruction (6)
- Other, please specify: (7)

ClinTime14 For your \${q://QID38/ChoiceGroup/SelectedChoices} caseload, 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 (1)

- One-on-one at home (1)
- One-on-one in therapy room (2)
- Small group in therapy room (3)
- One-on-one in classroom (4)
- Small group in classroom (5)
- Whole class instruction (6)
- Other, please specify: (7)

ClinTime15 For your  $\{q://QID38/ChoiceGroup/SelectedChoices\}$  caseload, 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) (1)
- 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). (2)
- 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) (3)
- Other, please specify: (4) \_\_\_\_\_

ClinTime16 For your  $\{q://QID38/ChoiceGroup/SelectedChoices\}$  caseload, indicate the frequency that you use each of the following procedures(activities) when targeting grammatical forms?

	Never (1)	Sometimes (2)	Frequently (3)
Models (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recasts (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Requests for imitation (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Explicit presentations of the pattern guiding the target form (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify: (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Clintime17 For your  $\{q://QID38/ChoiceGroup/SelectedChoices\}$  caseload, please indicate the frequency with which you directly...

	Never (1)	Sometimes (2)	Frequently (3)
Drill (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Play with toys (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conversation (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Worksheets (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Book Reading (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Narrative development and production (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Academic coursework (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Writing (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify: (9)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Clintime18 For your  $\{q://QID38/ChoiceGroup/SelectedChoices\}$ , how frequently do you directly coach parents, teachers, or other service providers to use strategies to support grammatical development?

	Never (1)	Sometimes (2)	Frequently (3)
Parent (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other service provider (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Clintime19 For your  $\{q://QID38/ChoiceGroup/SelectedChoices\}$  caseload, how frequently do you use the following tools to monitor progress on grammatical treatment goals? (Select all that apply.)

	Never (1)	Sometimes (2)	Frequently (3)
Observation (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informal language sample (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Language sample analysis (e.g. mean length utterance, other analysis) (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Informal probes (4)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Standardized test (5)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Parent report (6)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Teacher report (7)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify: (8)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Answer If For your  $\{q://QID38/ChoiceGroup/SelectedChoices\}$  caseload, how frequently do you use the followi... Language sample analysis (e.g. mean length utterance, other analysis) - Sometimes Is Selected Or For

your  $\{q://QID38/ChoiceGroup/SelectedChoices\}$  caseload, how frequently do you use the followi... Language sample analysis (e.g. mean length utterance, other analysis) - Frequently Is Selected

Clintime20 For your  $\{q://QID38/ChoiceGroup/SelectedChoices\}$  caseload, 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) (1)
- DSS (Developmental Sentence Scoring) (2)
- IPSyn (Index of Productive Syntax) (3)
- LARSP (Language Assessment, Remediation and Screening Procedure) (4)

- MLU (Mean Length of Utterance) (5)
- TTR (Type Token Ratio) (7)
- Other, please specify: (8) \_\_\_\_\_

Answer If For your \${q://QID38/ChoiceGroup/SelectedChoices} caseload, how frequently do you use the followi... Standardized test - Sometimes Is Selected Or For your \${q://QID38/ChoiceGroup/SelectedChoices} caseload, how frequently do you use the followi... Standardized test - Frequently Is Selected

Clintime21 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) (1)
- Battelle Developmental Inventory-2 (BDI) (2)
- Carrow Elicited Language Inventory (CELI) (3)
- Children's Communication Checklist-2 (CCC-2) (4)
- Clinical Evaluation of Language Fundamentals (CELF) (5)
- Comprehensive Assessment of Spoken Language (CASL) (6)
- Diagnostic Evaluation of Language Variation (DELV) (7)
- Illinois Test of Psycholinguistic Abilities (ITPA) (8)
- Multilevel Informal Language Inventory (MILI) (9)
- Northwestern Syntax Screening Test (NSST) (10)
- Oral & Written Language Scales (OWLS) (11)
- Preschool Language Assessment Instrument (PLAI) (12)
- Preschool Language Scale (PLS) (13)
- Receptive-Expressive Emergent Language Scale (REEL) (14)
- Renfrew Bus Story (15)
- Rice/Wexler Test of Early Grammatical Impairment (TEGI) (16)
- Sequenced Inventory of Communication Development (SICD) (17)
- Structured Photographic Expressive Language Test (SPELT) (18)
- Test for Auditory Comprehension of Language (TACL) (19)
- Test for Examining Expressive Morphology (TEEM) (20)
- Test for the Reception of Grammar (TROG) (21)
- Test of Adolescent and Adult Language (TOAL) (22)
- Test of Early Language Development (TELD) (23)
- Test of Language Development (TOLD) (24)
- Utah Test of Language Development (UTLD) (25)
- Woodcock Language Proficiency Battery (WLPB) (26)
- Other, please specify: (27) \_\_\_\_\_

Clintime22 In which state do you primarily work?

Clintime23 How many years have you been employed in the field of speech-language pathology?

- Less than 1 year (1)
- 1 to 5 years (2)
- 5 to 10 years (3)
- 10+ years (4)

Clintime24 What is the highest degree you hold?

- High School/GED (1)
- Bachelor (2)
- Master (3)
- Ph.D. (4)
- Ed.D. (5)

Clintime25 Do you hold ASHA's Certificate of Clinical Competence (CCC) in Speech-Language Pathology?

- Yes (1)
- No (2)

Clintime26 Indicate your sex.

- Male (1)
- Female (2)

Clintime27 Describe your racial background. (Select all that apply)

- American Indian or Alaska Native (1)
- Asian (2)
- Native Hawaiian or Other Pacific Islander (3)
- Black or African American (6)
- White or Caucasian (4)
- Other, please specify: (5) \_\_\_\_\_

Clintime28 What is your ethnicity?

- Hispanic or Latino (1)
- Not Hispanic or Latino (2)

Answer If Are you currently practicing speech-language pathology and serving children 0 through 21 years of... Yes Is Selected

EndText Thank you for participating in this study. Please answer these final questions before submitting your response.

Answer If Are you currently practicing speech-language pathology and serving children 0 through 21 years of... Yes Is Selected

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



- Yes (1)
- No (2)

Answer If Are you currently practicing speech-language pathology and serving children 0 through 21 years of... No Is Selected

DNQtext Thanks for your interest in this study but you do not qualify for this study at this time. We have a question you can answer below if you are interested in participating in future research.

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

- Yes (1)
- No (2)

### Codes for Grammar Intervention

Present Progressive Verbs (PPV)	She's crying.
Prepositions (Preps)	Dog on bed. Ball in box.
Plural -s (Plu)	My toys
Possessive -s (Poss)	Daddy's shoe.
Copula 'be' (Copula)	He was sad. She's funny.
Articles 'a' 'an' 'the' (Art)	The cat.
Regular + Irregular Past Tense -ed (PT)	He Jumped up.
Regular and Irregular Third Person singular -s (TPS)	Daddy drive's fast. We did it.
Auxiliary verbs (Aux)	Mommy was sleeping. They are eating.
Pronouns (Pron)	He did it. Her coat is dirty.
Questions (Qs)	Where is the house?
Negatives (Negs)	There are no animals. She doesn't like it.
Expanding Utterances (Expand)	I like the blue hat. I went to the store and bought some milk.
Nouns (Nouns)	Person, Place, Think
Adjectives (Adj)	Pink skirt. Pretty dress.
Verbs (Verbs)	Any un-sepecified verb target. Ran, runs, running.
Irregular Verbs (iVerbs)	I bought a dress.
Nonspecific (NS)	Syntax, semantics, morphology, sentence structure.

**Data Tables**

Early Education Caseload Diagnoses

Percent of Caseload	SLI		ASD		DD		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
0	20	17.5	36	31.6	36	31.6	62	54.4
1-25	18	15.7	40	35.1	49	43.0	32	28.1
26-50	33	28.9	32	28.1	20	17.5	10	8.7
51-75	21	18.4	4	3.5	5	4.4	3	2.6
76-100	22	19.3	2	1.8	4	3.5	7	6.1

Elementary School Caseload Diagnoses

Percent of Caseload	SLI		ASD		DD		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
0	35	15.6	66	29.4	75	33.4	127	56.7
1-25	35	15.6	100	44.6	91	40.6	63	28.1
26-50	51	22.8	36	16.1	43	19.2	17	7.6
51-75	42	18.8	10	4.4	10	4.4	6	2.7
76-100	61	27.2	12	5.3	5	2.2	11	4.9

Middle/High School Caseload Diagnoses

Percentage	SLI		ASD		DD		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
0	13	28.8	11	24.4	15	33.3	24	53.3
1-25	5	11.1	18	40	22	48.9	13	28.9
26-50	8	17.8	9	20	6	13.3	6	13.3
51-75	10	22.2	3	6.8	0	0	0	0
76-100	9	20	4	8.9	2	4.4	2	4.4

Early Education Treatment Contexts

Percent of Time	Individual Therapy at Home		Individual Therapy in Therapy Room		Small Group Therapy in Therapy Room		Individual Therapy in Classroom		Small Group Therapy In Classroom		Whole Class Instruction		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
0	72	63.2	28	24.6	90	78.9	98	86.0	96	84.2	101	88.6	105	92.1
1-25	19	16.7	14	12.3	10	8.8	11	9.6	8	7.0	8	7.0	3	2.6
26-50	6	5.3	15	13.2	8	7.0	4	3.5	9	7.9	5	4.3	3	2.6
51-75	1	<1	6	5.3	2	1.8	1	<1	0	0	0	0	1	<1
76-100	16	14.0	51	44.7	4	3.5	0	0	1	<1	0	0	1	<1
Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Early Education Ideal Treatment Contexts

Percent of Time	Individual Therapy at Home		Individual Therapy in Therapy Room		Small Group Therapy in Therapy Room		Individual Therapy in Classroom		Small Group Therapy In Classroom		Whole Class Instruction		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
0	48	42.1	29	25.4	76	66.7	89	78.1	76	66.7	88	77.2	102	89.5
1-25	27	23.7	23	20.2	24	21.1	20	17.5	27	23.7	21	18.4	8	7.0
26-50	21	18.4	28	24.6	12	10.5	4	3.5	9	7.9	3	2.6	3	2.6
51-75	3	2.6	10	8.8	2	1.8	1	<1	2	1.8	1	<1	0	0
76-100	15	13.2	24	21.1	0	0	0	0	0	0	1	<1	1	<1
Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Elementary School Treatment Contexts

Percent of Time	Individual Therapy at Home		Individual Therapy in Therapy Room		Small Group Therapy in Therapy Room		Individual Therapy in Classroom		Small Group Therapy In Classroom		Whole Class Instruction		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
0	185	82.6	80	35.7	66	29.5	197	87.6	168	75.0	183	81.7	213	95.1
1-25	27	12.1	53	23.7	21	9.4	25	11.2	45	20.1	30	13.4	5	2.2
26-50	7	3.1	34	15.2	32	14.3	2	<1	10	4.5	4	1.8	3	1.3
51-75	0	0	9	4.0	26	11.6	0	0	1	<1	5	2.2	0	0
76-100	5	2.2	48	21.4	79	35.3	0	0	0	0	2	<1	3	1.3
Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Ideal Elementary School Treatment Contexts

Percent of Time	Individual Therapy at Home		Individual Therapy in Therapy Room		Small Group Therapy in Therapy Room		Individual Therapy in Classroom		Small Group Therapy In Classroom		Whole Class Instruction		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
0	135	60.3	54	24.1	78	34.8	166	74.1	117	52.2	144	64.3	211	94.2
1-25	65	29.0	46	20.5	70	31.3	48	21.4	68	30.4	58	25.9	6	2.7
26-50	20	8.9	72	32.1	57	25.4	8	3.6	33	14.7	17	7.6	3	1.3
51-75	1	<1	27	12.1	9	4.0	0	0	4	1.8	1	<1	2	<1
76-100	3	1.3	25	11.2	10	4.4	2	<1	2	<1	4	1.8	2	<1
Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Middle/High School Treatment Contexts

Percent of Time	Individual Therapy at Home		Individual Therapy in Therapy Room		Small Group Therapy in Therapy Room		Individual Therapy in Classroom		Small Group Therapy In Classroom		Whole Class Instruction		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
0	39	86.7	26	57.8	15	33.3	37	82.2	28	62.2	33	73.3	41	91.1
1-25	3	6.7	7	15.6	8	17.8	6	13.3	8	17.8	9	20.0	3	6.7
26-50	0	0	3	6.7	5	11.1	1	2.2	7	15.6	0	0	0	0
51-75	0	0	2	4.4	4	8.9	0	0	1	2.2	1	2.2	0	0
76-100	3	6.7	6	13.3	13	28.9	1	2.2	1	2.2	2	4.4	1	2.2
Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Middle/High School Ideal Treatment Contexts

Percent of Time	Individual Therapy at Home		Individual Therapy in Therapy Room		Small Group Therapy in Therapy Room		Individual Therapy in Classroom		Small Group Therapy In Classroom		Whole Class Instruction		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
0	33	73.3	15	33.3	20	44.4	34	75.6	19	42.2	28	62.2	42	93.3
1-25	9	20.0	14	31.1	14	31.1	8	17.8	13	28.9	11	24.2	2	4.4
26-50	3	6.7	9	20.0	5	11.1	1	2.2	11	24.4	5	11.1	0	0
51-75	0	0	2	4.4	2	4.4	2	4.4	2	4.4	1	2.2	0	0
76-100	0	0	5	11.1	4	8.9	0	0	0	0	0	0	1	2.2
Missing	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Participants' Frequency Ratings: Use of Therapy Procedures for Children in Early Education

Frequency	Models		Recasts		Requests for Imitation		Explicit Presentations		Other	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Never	0	0	2	1.8	0	0	4	3.5	1	<1
Sometimes	2	1.8	24	21.1	29	25.4	35	30.7	1	<1
Frequently	112	98.2	84	73.7	83	72.8	73	64.0	7	6.1
Missing	0	0	4	3.5	2	1.8	2	1.8	105	92.1

Participants' Frequency Ratings: Use of Therapy Activities for Children in Early Education

	Drill		Play with Toys		Conversation		Worksheets		Book Reading		Narrative Development		Academic Coursework		Writing		Other	
Frequency	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Never	17	14.9	0	0	1	<1	57	50.0	2	1.8	22	19.3	75	65.8	82	71.9	3	2.6
Sometimes	52	45.6	22	19.3	26	22.8	44	38.6	48	42.1	47	41.2	28	24.6	24	21.1	2	1.8
Frequently	42	36.8	92	80.7	87	76.3	6	2.0	62	54.4	38	33.3	3	2.6	1	<1	3	2.6
Missing	3	2.6	0	0	0	0	7	6.1	2	1.8	7	6.1	8	7.0	7	6.1	106	93.0

Participants Frequency Ratings: Tools Used for Monitoring Progress in Early Education

	Observation		Informal Language Sampling		Language Sample Analysis		Informal Probes		Standardized Test		Parent Report		Teacher Report		Other	
Frequency	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Never	2	1.8	2	1.8	20	17.5	1	<1	7	6.1	2	1.8	23	10.3	5	2.2
Sometimes	15	13.2	38	33.3	58	50.9	43	37.7	78	68.4	49	43.0	134	59.8	4	1.8
Frequently	95	83.3	73	64.0	34	29.8	65	57.0	24	21.1	60	52.6	59	26.3	7	3.1
Missing	2	1.8	1	<1	2	1.8	5	4.4	3	4.4	3	2.6	8	3.6	208	92.9



Participants' Frequency Ratings: Use of Therapy Procedures for Children in Elementary Education

Frequency	Models		Recasts		Requests for Imitation		Explicit Presentations		Other	
	n	%	n	%	n	%	n	%	n	%
Never	0	0	6	2.7	4	1.8	3	1.3	1	<1
Sometimes	20	8.9	60	26.8	77	34.4	61	27.2	4	1.8
Frequently	202	90.2	146	65.2	137	61.2	155	69.2	10	4.5
Missing	2	<1	12	5.4	6	2.7	5	2.2	209	93.3

Participants' Frequency Ratings: Use of Therapy Activities for Children in Elementary Education

Frequency	Drill		Play with Toys		Conversation		Worksheets		Book Reading		Narrative Development		Academic Coursework		Writing		Other	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Never	19	8.5	29	12.9	3	1.3	61	27.2	13	5.8	26	11.6	50	22.3	60	26.8	3	1.3
Sometimes	91	40.6	107	47.8	71	31.7	121	54.0	112	50.0	95	42.4	135	60.3	126	56.3	1	<1
Frequently	111	49.6	79	35.3	149	66.5	35	15.6	94	42.0	93	41.5	30	13.4	33	14.7	7	3.1
Missing	3	1.3	9	4.9	1	<1	7	3.1	5	2.2	10	4.5	9	4.0	5	2.2	213	95.1

Participants' Frequency Ratings: Methods of Re-Assessment for Children in Elementary Education

Frequency	Observation		Informal Language Sampling		Language Sample Analysis		Informal Probes		Standardized Test		Parent Report		Teacher Report		Other	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Never	4	1.8	3	1.3	54	24.1	2	<1	33	14.7	32	14.3	23	10.3	5	2.2
Sometimes	69	30.8	98	43.8	116	51.8	73	32.6	159	71.0	130	58.0	134	59.8	4	1.8
Frequently	147	65.6	119	53.1	46	20.5	143	63.8	28	12.5	53	23.7	59	26.3	7	3.1
Missing	4	1.8	4	1.8	8	3.6	6	2.7	4	1.8	9	4.0	8	3.6	208	92.9

Participants' Frequency Ratings: Use of Therapy Procedures for Children in Middle/High School

Frequency	Models		Recasts		Requests for Imitation		Explicit Presentations		Other	
	n	%	n	%	n	%	n	%	n	%
Never	0	0	2	4.4	4	8.9	1	2.2	1	2.2
Sometimes	5	11.1	17	37.8	21	46.7	16	35.6	3	6.7
Frequently	40	88.9	25	55.6	19	42.2	28	62.2	0	0
Missing	0	0	1	2.2	1	2.2	0	0	41	91.1

Participants' Frequency Ratings: Use of Therapy Activities for Children in Middle/High School

Frequency	Drill		Play with Toys		Conversation		Worksheets		Book Reading		Narrative Development		Academic Coursework		Writing		Other	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Never	7	15.6	29	64.4	1	2.2	9	20.0	2	4.4	4	8.9	2	4.4	6	13.3	1	2.2
Sometimes	27	60.0	11	24.4	11	24.4	24	53.3	30	66.7	19	42.2	25	55.6	26	57.8	0	0
Frequently	10	22.2	3	6.7	33	73.3	12	26.7	13	28.9	21	46.7	17	37.8	13	28.9	2	4.4
Missing	1	2.2	2	4.4	0	0	0	0	0	0	1	2.2	1	2.2	0	0	42	93.3

Participants' Frequency Ratings: Use of Methods of Re-Assessment for Children in Middle/High School

Frequency	Observation		Informal Language Sampling		Language Sample Analysis		Informal Probes		Standardized Test		Parent Report		Teacher Report		Other	
	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Never	0	0	1	2.2	12	26.7	1	2.2	4	8.9	10	22.2	0	0	1	2.2
Sometimes	13	28.9	12	26.7	25	55.6	14	31.1	35	77.8	29	64.4	30	66.7	0	0
Frequently	32	71.1	31	68.9	8	17.8	30	66.7	6	13.3	4	8.9	15	33.3	2	4.4
Missing	0	0	1	2.2	0	0	0	0	0	0	2	4.4	0	0	42	93.3

### Standardized Assessments Used for Each Age Group

Assessment	Early Education		Elementary School		Middle/High School	
	n	%	n	%	n	%
BLT	1	<1	0	0	0	0
BDI	1	<1	2	1.1	1	24.4
CELI	0	0	0	0	0	0
CCC-2	2	2.0	2	1.1	2	4.9
CELF	72	70.6	153	81.8	31	75.6
CASL	13	12.7	78	41.7	20	48.8
DELV	1	<1	3	1.6	0	0
ITPA	0	0	0	0	0	0
MILI	0	0	0	0	0	0
NSST	0	0	0	0	0	0
OWLS	12	11.8	53	28.3	18	43.9
PLAI	1	<1	0	0	0	0
PLS	89	87.3	78	41.7	8	19.5
REEL	19	18.6	6	3.2	2	4.9
Renfrew Story	2	2.0	1	<1	0	0
TEGI	0	0	0	0	0	0
SICD	1	<1	2	1.1	0	0
SPELT	22	21.6	25	13.4	4	9.8
TACL	2	19.6	19	10.2	1	2.4
TEEM	0	0	7	3.7	0	0
TROG	0	0	0	0	0	0
TOAL	0	0	3	1.6	2	4.9
TELD	5	4.9	3	1.6	1	2.4
TOLD	13	12.7	50	26.7	9	22.0
UTLD	0	0	0	0	0	0
WLPB	0	0	1	<1	0	0
Other	8	7.8	17	9.1	3	7.3
Sample Size	102		187		41	

Bankson Language Test-2 (BLT), Battelle, Development 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 and Written Language Scales (OWLS), Preschool Language Assessment Instrument (PLAI), Preschool, Language Scale (PLS), Receptive/Expressive Emergent Language Scale (REELO), 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 (TAOL), Test of Early Language Development (TELD), Test of Language Development (TOLD), Utah Test of Language Development (UTLD), Woodcock Language Proficiency Battery (WLPB).