

Original Article

Faculty's Perceptions and Experiences Teaching Language Sample Analysis in Children: An Exploratory Survey

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Michelle H Lenhart¹,
Rebecca Bawayan²

¹Department of Communication Sciences & Disorders, Radford University, Radford, VA, United States

²School of Rehabilitation Sciences, Moravian University, Bethlehem, PA, United States

Purpose Clinical instruction in language sample analysis (LSA) from the faculty perspective has not been studied across programs, despite the literature indicating that most speech-language pathologists receive the bulk of their training in LSA during their educational program. The purpose of this study was to explore faculty's teaching practices in both undergraduate and graduate LSA instruction.

Methods Faculty who teach courses that address language sample analysis to undergraduate and graduate students in communication sciences and disorders responded to an invitation to complete an online survey related to LSA instructional practices and barriers. The survey consisted of 43 questions pertaining to demographic information, LSA teaching and assessment practices, and faculty perspectives.

Results Faculty reported frequent use of play-based, conversational, and narrative contexts in both undergraduate and graduate coursework; however, play-based contexts were more common at the undergraduate level, whereas narrative and expository contexts were more prevalent in graduate instruction. Analysis methods and metrics varied, with higher use of the Sampling Utterances Grammatical Analysis Revised (SUGAR) protocol with graduate students. Faculty reported barriers to LSA instruction such as foundational knowledge deficits, perceived clinical irrelevance, student attitudes and learning styles, and instructional challenges.

Conclusions The results highlighted variability and instructional challenges in LSA instruction. More research is needed to mitigate barriers to effective LSA instruction.

Keywords language sample analysis; survey; children

INTRODUCTION

Language sample analysis (LSA) is a powerful and widely researched tool that has been called the gold standard for assessing the language abilities of an individual [1]. Despite this designation, practicing SLPs use LSA with varying consistency, showing a preference for making diagnostic decisions using standardized tests [2-4]. LSA offers many advantages over the use of standardized and/or norm-referenced tests. For example, language sample analysis provides key information about language performance during contexts that are more consistent with

everyday language use, whereas standardized tests often assess language skills using less natural tasks, such as labeling, recalling sentences, and/or completing cloze procedures [4]. Furthermore, there are several LSA measures which have been shown to have acceptable diagnostic accuracy measures [5]. Standardized tests are often inappropriate or biased for bilingual children and speakers of non-mainstream English which may be reduced when using LSA [6-8]. Because LSA can yield information about both microstructural elements such as morphosyntax and macrostructural elements such as text structures and cohesion, it lends itself to therapeutic planning and goal

Corresponding to Michelle H Lenhart

Department of Communication Sciences & Disorders, Radford University

TEL. +1 540-831-7807, **FAX.** +1 540-831-7740, **E-mail.** mlenhart@radford.edu

development. Furthermore, because practice effects are not a concern, it may be used for progress monitoring, while this is often restricted with standardized testing.

SLPs' Use of LSA

Despite myriads of benefits, practicing SLPs' use of LSA varies widely in both the number of SLPs using LSA and the frequency with which it is used. Use of LSA during assessment has varied between 60% and 90% for school-based practitioners in recent surveys, with most indicating that they use LSA fewer than 10 times per year [4,9,10]. Commonly reported barriers to LSA use include time constraints, lack of resources, and a lack of knowledge and/or training [4,10-13]. Research addressing the barriers of time and resource constraints has included the introduction of free and/or cost-effective computer programs, reduction of the number of required utterances, and use of artificial intelligence to expedite LSA transcription [14-19].

The barriers of lack of knowledge and training may contribute to limited adherence to best practices for LSA collection, transcription, and analysis. Survey studies of current practices suggest that live transcription while interacting with the child, use of self-designed protocols, and exclusive use of protocols based on General American English are frequent, despite the scholarly literature indicating that these practices are not consistent with the evidence base [4,9,10,12]. SLPs report low confidence with language sample collection, analysis, and interpretation in multiple studies in addition to interest in additional training [4,9,10,12]. Given this information, exploring the educational practices for teaching language sample analysis from both the student and instructor perspective is indicated.

Students' LSA Learning Experiences

Relatively few studies examine the LSA knowledge and experiences of students in preparation programs. These studies are important as current literature in the field suggests that most clinicians rely on their undergraduate

and graduate training to complete LSA [4,9,10]. Bawayan and colleagues surveyed 114 undergraduate and graduate SLP students to understand their educational experiences with LSA for children [20]. Most of the respondents indicated having completed between 1-5 language samples in their coursework and/or clinical training. Most undergraduate and graduate students reported using the conversation context. Graduate students were more likely to have used both picture description and narrative contexts. Both groups of students had limited uses of the expository context. Students were given an extensive list of common analysis measures. Most undergraduate and graduate students reported using mean length of utterance (MLU) and total number of words (TNW). However, no other analysis measure was used by more than 50% of both groups of students. Over half of the graduate students reported using type token ratio (TTR) and number of different words (NDW). Students were asked to rate their own level of knowledge, skills, and preparedness in the collection, transcription, and analysis across different sample contexts. Expectedly, in most areas, graduate students rated their own preparedness higher than that of undergraduate students. Both student groups reported being less knowledgeable and prepared for the collection, transcription, and analysis of expository contexts.

The results indicated that both undergraduate and graduate students received experiences in one or more classes focusing on LSA. This study also demonstrated areas of potential improvement for LSA education. Students should have varied experiences with contexts, collection methods, and analysis measures. The results indicated and aligned with current practice in that most students had experiences solely with conversational samples [4,9,20]. However, the current evidence recommends narrative, expository, and persuasive samples are best for older students [18,21,22]. Students reported using analyses measures criticized in the literature as for a lack of clinical utility for the identification of a language disorder [23,24]. Therefore, instruction should include experiences

with clinically relevant and varied analysis measures to help increase the likelihood of LSA use in clinical situations.

LSA Instructional Practices

While the literature suggests that graduate and undergraduate training is the primary mechanism through which speech-language pathology students are trained in LSA, few studies have investigated the instructional practices of LSA instruction at the university level. Effective instructional practices at the university level are key to the preparation of confident, prepared clinicians to perform LSA in their chosen settings. The current research on LSA pedagogical practices is summarized below.

Flippin studied the perspectives of undergraduate students following an experiential learning activity using Language Environmental Analysis (LENA [25]), which is a wearable recording device that provides automated data about the language environment of the wearer [26]. Following this assignment, students' knowledge and attitudes for LSA improved. Kroecker and colleagues investigated the influence of training of undergraduate students on the quality of LSA collection skills [27]. They also found that when provided with visual supports and role-play practice, the quality of the SLP student's questions and the length of the utterances elicited from children improved significantly. Ogiela and Aldrich examined the influence of self-paced online LSA training modules and automated feedback on SLP students' transcription time and accuracy [28]. Following the training, time required for transcription and coding decreased, and students' accuracy of coding and confidence with LSA increased. These studies highlight the potential positive impact of high-quality instructional practices for LSA on both student perspectives and on language sample quality.

Few studies have examined students' accuracy with LSA. As mentioned above, Ogiela and Aldrich found that when provided with the opportunity to practice and receive feedback on transcription and coding of 7-10 narra-

tive language samples, students' accuracy improved [28]. Bitetti examined accuracy of LSA metrics for undergraduate and postbaccalaureate students [29]. She found that student values differed significantly when involving totals, such as the number of complete and intelligible utterances, words and/or different words, but that ratios and averages, such as MLU and TTR, did not differ significantly from the instructor. This indicates that students may benefit from additional training.

Each of these studies offers valuable insight into the potential ways to teach language sample analysis and how training has the potential to improve both outcomes and confidence. Single program studies are beneficial for introducing specific effective teaching practices, but to date, all published studies into LSA instructional practices have consisted of single-site studies. This leaves a significant gap in the literature pertaining to how speech-language pathology programs are teaching LSA. A survey that examines LSA instructional practices by faculty is needed to understand the mechanisms behind the research-to-practice gap once students become clinicians. The purpose of this survey is to determine instructional practices of faculty teaching both undergraduate and graduate students about LSA in children across speech-language pathology programs. The current study aimed to answer the following research questions:

- 1) What assessment practices are incorporated by faculty who teach LSA to SLP students? How do assessment practices differ between undergraduate and graduate coursework?
- 2) What sampling contexts do faculty incorporate into their SLP student training? How do sampling contexts differ between undergraduate and graduate coursework?
- 3) What metrics and/or methods do faculty incorporate into SLP student LSA training? How do metrics and/or methods differ between undergraduate and graduate coursework?
- 4) To what extent do faculty believe that graduates

from their undergraduate and graduate programs are prepared to perform LSA after graduation?

5) What barriers do faculty face when teaching LSA?

METHODS

Reporting for this study follows the CROSS Checklist for Reporting of Survey Studies [30].

Survey Development

The electronic survey consisted of 43 total questions in three separate sections: demographic and background information (10 questions), LSA teaching and assessment practices (27 questions), and faculty perspectives on LSA (6 questions). The content of the survey is described in Table 1. The survey questions were adapted from two prior surveys pertaining to LSA practices [9,20]. In addition to the pilot-testing and member checking of the original surveys (as described in those respective manuscripts [9,20]), the first author conducted a cognitive interview with an expert faculty member with over 20 years of experience who fit the survey's inclusion criteria. This cognitive interview consisted of this faculty member completing a "think aloud" while taking the survey instrument with the instruction to provide feedback about the clarity, content coverage, and content relevance of the survey items. During this process, the first author tran-

scribed feedback from the respondent and used this information to review and reword questions to decrease the likelihood of inaccurate and/or inconsistent responses. Following this initial round of feedback, pilot testing was conducted with a small group of two faculty members who reported no issues with survey navigation nor the need for further clarification of the survey items.

Demographic information of interest included the gender of participants, the region and Carnegie classification of their academic institution, ASHA affiliation, highest degree achieved, respondents' rank(s) and/or role(s) within their department, years and settings of clinical practice, and years of teaching experience. Questions concerning LSA teaching and assessment practices included population of students served, number of courses that incorporate language sampling, number of courses that pertain to child language development and/or disorders, modality of coursework, class size, teaching activities that pertain to LSA, and assessment practices for evaluating student performance with LSA. This section also included questions about the types of language samples completed in their coursework, such as the number of samples, the age of the child for which LSA is conducted, components of LSA included, LSA measures that are introduced, LSA measures that are performed by students, as well as LSA contexts and methods. Faculty who teach both undergraduate and graduate students about LSA were asked questions about each population separately.

Finally, in the faculty perspectives on LSA section, fac-

Table 1. Survey Content and Structure

Survey Section	Content in Section	Number of Items
Demographic and Background Information	Respondent's gender, geographic region, institution's Carnegie classification, ASHA affiliation, faculty rank and degree achieved, clinical practice and teaching experiences	10
LSA Teaching and Assessment Practices	Student populations taught; courses incorporating LSA; undergraduate and graduate LSA instruction, including course format, class size, number of language samples, age ranges, LSA components taught, instructional methods, assessment methods, sampling contexts, analysis methods, and LSA measures introduced and performed	27
Faculty Perspectives on LSA	Benefits of LSA instruction, barriers to teaching LSA, student challenges, perceived preparedness of undergraduate and graduate students, and recommendations for improving instruction and clinical uptake of LSA	6
Total Survey Items	Sum of above sections	43

ulty were asked open-ended questions pertaining to the benefits, barriers, and student challenges of teaching LSA. Faculty reported the perceived preparedness of their students to perform LSA upon graduation for undergraduate and graduate student populations, as relevant to their coursework.

Recruitment

This cross-sectional survey study obtained approval from the Radford University Institutional Review Board (Protocol# 2025-021-RU) before data collection began. Recruitment occurred using a purposive sample. Eligible participants must hold a position as a full-time, part-time or adjunct faculty member at an institution and be directly involved in the didactic teaching of language sample analysis to undergraduate and/or graduate students in the fields of communication sciences and disorders, speech-language pathology, or similarly named fields, such as speech and hearing sciences. Faculty contact information was obtained via publicly available information on university websites and/or ASHA Edfind [31]. Faculty whose expertise pertained to children's language development were contacted first. If it could not be determined whether there was a faculty member with expertise in child language development, the department chair and/or program coordinator for an institution was contacted. The survey was distributed over email to 457 faculty members. There was a 21% response rate. This response rate is comparable to other recent published surveys of communication sciences and disorders faculty which varied between 16 and 24% [32,33].

RESULTS

A total of 100 people accessed the survey, and 98 began the survey. One participant was excluded due to only completing 4% of the survey. All other levels of survey

completeness were included in the analytic sample of 97

Table 2. Participants' Demographic Information

Demographic Variable	n (%)
Gender	
Female	87 (89.69%)
Male	10 (10.31%)
Region	
Midwest	29 (29.9%)
Northeast	23 (23.71%)
South	29 (29.9%)
West	16 (16.49%)
Institution Classification	
Baccalaureate College/University	6 (6.19%)
D/PU (Doctoral/Professional University)	7 (7.22%)
M1 (Master's College/University- Larger program)	6 (6.19%)
M2 (Master's College/University- Medium program)	13 (13.40%)
M3 (Master's College/University- Small program)	5 (5.15%)
R1 (Doctoral University- Very high research activity)	34 (35.05%)
R2 (Doctoral University- High research activity)	16 (16.49%)
Other	10 (10.31%)
Degree	
Clinical Doctorate	4 (4.12%)
Doctorate of Philosophy or Doctor of Education	81 (83.51%)
Master's Degree	12 (12.37%)
Faculty Role	
Adjunct faculty	2 (2.06%)
Clinical faculty/instructor	5 (5.15%)
Department Chair	2 (2.06%)
Non-tenure track faculty member	8 (8.25%)
Non-tenure track faculty member, Clinical faculty/instructor	4 (4.12%)
Non-tenure track faculty member, Clinical faculty/instructor, Department Chair	1 (1.03%)
Non-tenure track faculty member, Department Chair	1 (1.03%)
Tenure-track faculty member	29 (29.9%)
Tenured faculty member	39 (40.21%)
Tenured faculty member, Department Chair	6 (6.19%)
Teaching Experience	
1-5 years	25 (26.32%)
6-10 years	23 (24.21%)
11-15 years	11 (11.58%)
16-20 years	13 (13.68%)
21-25 years	11 (11.58%)
26-30 years	5 (5.26%)
31-35 years	6 (6.32%)
35+ years	1 (1.05%)

Table 3. Participant and Coursework Response Breakdown for LSA Instruction Analyses

<i>Educational Level</i>	<i>Responses (n)</i>
Undergraduate only	14
Undergraduate (from participants reporting both undergraduate and graduate coursework)	47
Total undergraduate responses	61
Graduate only	25
Graduate (from participants reporting both undergraduate and graduate coursework)	47
Total graduate responses	72
Total responses analyzed	133

Note: A total of 86 participants provided information regarding LSA assessment. Of these, 14 participants reported undergraduate coursework only, 25 reported graduate coursework only, and 47 reported both undergraduate and graduate coursework. Participants reporting both educational levels contributed one undergraduate and one graduate coursework response, resulting in 133 total coursework responses included in the analyses.

participants. Demographic information of the participants is located in Table 2. Participants were overwhelmingly female and represented programs of varied size from across the United States. Most participants were tenured or on the tenure track, and years of teaching experience ranged from one year to 42 years. As illustrated in Table 3, 86 participants provided information about LSA assessment, contexts, methods, and metrics used in their coursework. Of these, 14 participants provided information about undergraduate coursework exclusively, 25 participants provided information about graduate coursework alone, and 47 participants provided information about both graduate and undergraduate coursework. Consequently, analyses of coursework experiences were based on 133 total coursework responses (61 undergraduate and 72 graduate responses), as participants reporting both educational levels contributed data to each category.

Descriptive and inferential statistics were used to analyze responses. Descriptive statistics included frequencies and percentages for assessment practices, sampling contexts, and training metrics and methods of LSA. Inferential statistics assessed the differences between the instructional practices reported when teaching LSA to undergraduate and graduate students and differences in per-

ceived preparedness. Chi-squared analyses were used to examine differences in undergraduate and graduate assessment practices, contexts, metrics, and methods of LSA instruction. Mann-Whitney U tests were used to compare instructors' perceived preparedness of undergraduate and graduate students. In the present study, undergraduate and graduate coursework represented distinct educational experiences associated with different curricular contexts and student cohorts. Accordingly, the unit of analysis was the instructional level, and undergraduate and graduate coursework were considered independent observations for the purposes of these analyses. The comparisons examined differences in content coverage across undergraduate and graduate training experiences; analyses were conducted at the coursework level and not at the faculty level. Additionally, thematic analysis was implemented to discuss the barriers faculty face when teaching LSA.

Research Question 1: LSA Assessment Practices

This research question examined the assessment practices faculty incorporated into courses where they taught LSA to SLP students. Table 4 depicts the results for undergraduate and graduate students. Faculty were able to select all the choices that applied including exam, in-class

Table 4. LSA Assessment Practices Disaggregated by Student Level

Assessment Method	Undergraduate Percentage of Use	Graduate Percentage of Use
Exam	31 (50%)	40 (56%)
In-Class Activity	38 (61%)	46 (65%)
Lab	15 (24%)	14 (20%)
Homework	29 (47%)	30 (42%)
Group Project/Group Case Study	23 (37%)	30 (42%)
Individual Project/Case Study	30 (48%)	38 (54%)
Not Assessed	1 (2%)	1 (1%)
Other	2 (3%)	3 (4%)

Note: Chi-squared tests were not significant at $p < .05$ level. No analyses were statistically different.

activities, labs, homework, group projects or case studies, and individual projects or case studies. Faculty used a variety of assessment measures for both undergraduate and graduate students. For the undergraduate population, most participants selected in-class activities (61%, $n=38$) and half of the participants (50%, $n=31$) assessed LSA skills through exams. For graduate courses, participants used exams (56%, $n=40$), in-class activities (65%, $n=46$), and individual projects/case studies (54%, $n=38$). There were no statistically significant differences in assessment practices between undergraduate and graduate coursework.

Research Question 2: Sampling Contexts

Participants reported which contexts they incorporated into their student training on LSA. Participants could select multiple contexts if applicable. For undergraduate course work, the majority of participants incorporated play-based (79%, $n=48$), conversation (59%, $n=36$), and narrative (54%, $n=33$) contexts. For graduate coursework, the majority of participants included narrative (77%, $n=55$), conversation (63%, $n=45$), and play-based (59%, $n=42$) contexts. A chi squared test of independence indicated that graduate coursework was more likely to use narrative $X^2 (1, N = 133) = 8.69, p = .003$ and expository contexts, $X^2 (1, N = 133) = 6.22, p = .013$, whereas undergraduate coursework was more likely to use the play-based

context, $X^2 (1, N = 133) = 5.05, p = .025$. Full results are located in Table 5.

Research Question 3: LSA Methods and Metrics

LSA Methods

Language samples can be performed using a single analysis or a group of analyses or by following some commonly used methods. Commonly used methods of language sample analysis include the Systematic Analysis of Language Transcripts [SALT] [34], Sampling Utterances Grammatical Analysis Revised [SUGAR] [35], and Computerized Language Analysis [CLAN] [36]. Participants reported whether they teach a particular method in their coursework and provided additional information if “other” best applied. Participants could select multiple methods and analyses if applicable. Methods of language sample analysis for undergraduate ($n = 62$) and graduate students ($n = 71$) are presented in Table 6. SUGAR [35] and SALT [34] were both widely used across both the undergraduate and graduate populations, but many respondents reported that they did not follow a single method. Responses to “Other” primarily consisted of a combination of individual metrics, self-designed protocols, and modifications of existing protocols. Multiple respondents also reported teaching methods of narrative language sample analysis such as Monitoring Indicators of Scholarly Language [MISL] [37],

Table 5. LSA Contexts Percentage of Use Disaggregated by Student Level

Context	Undergraduate Percentage of Use	Graduate Percentage of Use
Play-Based**	48 (79%)	42 (59%)
Conversation	36 (59%)	45 (63%)
Picture Description	16 (26%)	21 (30%)
Narrative**	33 (54%)	55 (77%)
Expository**	10 (16%)	25 (35%)
Persuasion	4 (7%)	8 (11%)
Interview	3 (5%)	6 (8%)
Other	3 (5%)	8 (11%)

Note: Variables with ** are significant at $p < .05$ level

Table 6. Use of Language Sample Analysis Methods Disaggregated by Student Level

Analysis Method	Undergraduate Percentage of Use	Graduate Percentage of Use
Systematic Analysis of Language Transcripts (SALT)	21 (34%)	31 (44%)
Sampling Utterances Grammatical Analysis Revised (SUGAR)**	20 (32%)	36 (51%)
Computerized Language ANalysis (CLAN)	4 (6%)	4 (6%)
No particular method	17 (27%)	14 (20%)
Other	19 (31%)	19 (27%)

Note: Variables with ** are significant at $p < .05$ level

CUBED [38], and School-Age Language Assessment Measures [SLAM] [39]. A chi-squared test of independence indicated that graduate coursework was more likely to use SUGAR $X^2(1, N = 133) = 4.62, p = .036$. Use of other methods (SALT, CLAN, self-designed methods, etc.) did not differ by graduate status.

LSA Metrics

Participants reported which individual analyses they introduce to their students when completing language samples in their undergraduate ($n = 62$) and graduate ($n = 71$) coursework. Respondents could select multiple analyses, if applicable. The majority of both undergraduate and graduate instructors reported introducing the following measures: mean length of utterance- morphemes (MLUM), mean length of utterance-words (MLUW), type token ratio (TTR), number of different words (NDW), number of total words (NTW), and total number of words (TNW). More than 50% of instructors of graduate level coursework also reported that they introduce narrative macrostructure (54%, $n = 38$) and grammaticality (52%, $n = 37$). A chi-squared test of independence indicated that graduate coursework was more likely to introduce cohesion analysis, $X^2(1, N = 133) = 5.04, p = .025$, developmental sentence scoring (DSS), $X^2(1, N = 133) = 4.30, p = .038$, clausal density or subordination index, $X^2(1, N = 133) = 4.77, p = .029$, counting the number of subordinate clauses, $X^2(1, N = 133) = 6.65, p = .010$, and verb tense, $X^2(1, N = 133) = 4.14, p = .042$. Graduate courses were also more likely to introduce analyses of narratives, such as narrative macrostructure, $X^2(1, N = 133) = 7.072, p = .008$ and narrative episode structure, $X^2(1, N = 133) = 8.272, p = .004$. Undergraduate coursework was more likely to introduce MLUM, $X^2(1, N = 133) = 11.60, p < .001$ than graduate coursework, but graduate coursework was more likely to introduce the SUGAR form of MLU (MLUSUGAR), $X^2(1, N = 133) = 4.15, p = .042$, and its complexity measure clauses per sentence (CPS), $X^2(1, N = 133) = 4.82, p = .028$. Full results can be found

Table 7. Language Sample Analysis Measures Introduced Disaggregated by Student Level

Analysis Measure	Undergraduate Percentage of Use	Graduate Percentage of Use
Assigning Structural Stage (ASS)	6 (10%)	9 (13%)
Content Form Analysis (CFA)	8 (13%)	8 (11%)
Cohesion Analysis**	7 (11%)	19 (27%)
Developmental Sentence Scoring (DSS)**	9 (15%)	21 (30%)
Index of Productive Syntax (IPSyn)	6 (10%)	14 (20%)
Mean Length of Utterance-Morphemes (MLUM)**	60 (97%)	54 (76%)
Mean Length of Utterance-Words (MLUW)	35 (56%)	45 (63%)
Type Token Ratio (TTR)	40 (65%)	40 (56%)
Clausal Density/Subordination Index**	19 (31%)	35 (49%)
Number of Subordinate Clauses**	17 (27%)	35 (49%)
Number of Different Words (NDW)	47 (76%)	51 (72%)
Number of Total Words (NTW)	43 (69%)	43 (65.2%)
Number of Mazes	18 (29%)	24 (34%)
Percentage of Mazes	12 (19%)	18 (25%)
Number of Elaborated Noun Phrases	11 (18%)	17 (24%)
Number of Story Grammar Components/Narrative Macrostructure**	19 (31%)	38 (54%)
Episode Structure of Narratives**	14 (23%)	33 (46%)
Grammaticality	26 (42%)	37 (52%)
Number of Verbs (e.g. mental verbs, linguistic verbs)	14 (23%)	27 (38%)
Number of Adverbs	9 (15%)	17 (24%)
Number of Adjectives	9 (15%)	16 (23%)
Tense**	15 (24%)	29 (41%)
Total Number of Words (TNW)	34 (55%)	45 (63%)
Mean Length of Utterance SUGAR (MLUSUGAR)**	15 (24%)	29 (41%)
Words per Sentence (WPS)	15 (24%)	22 (31%)
Clauses per Sentence (CPS)**	15 (24%)	30 (42%)
SUGAR sub-analysis	8 (13%)	15 (21%)
Other	15 (24%)	12 (17%)

Note: Variables with ** are significant at $p < .05$ level

in Table 7.

Participants reported which individual analyses they ask their students to perform when completing language samples in their undergraduate ($n=62$) and graduate ($n=71$) coursework. Respondents could select multiple analyses, if applicable. The majority of both undergraduate and graduate instructors reported using the following measures: mean length of utterance- morphemes (MLUM), number of different words (NDW), and number of total words (NTW). More than 50% of instructors of undergraduate level coursework also reported that students use type token ratio (TTR, 53%, $n=33$). In addition to the

measures above, more than 50% of instructors of graduate level coursework reported that students use mean length of utterance-words (MLUW, 55%, $n=39$) and total number of words (59%, $n=42$). Use of other potential analyses varied. A chi-squared test of independence indicated that in graduate coursework, cohesion analysis, $X^2(1, N=133) = 6.57, p=.010$, clausal density or subordination index, $X^2(1, N=133) = 9.326, p=.002$, percentage of mazes, $X^2(1, N=133) = 3.96, p=.046$ were used more frequently. Graduate courses were also more likely to use analyses of narratives, such as narrative macrostructure, $X^2(1, N=133) = 6.347, p=.012$, and narrative episode

Table 8. Use of Language Sample Analysis Metrics Disaggregated by Student Level

Analysis Metric	Undergraduate Percentage of Use	Graduate Percentage of Use
Assigning Structural Stage (ASS)	7 (11%)	5 (7%)
Content Form Analysis (CFA)	5 (8%)	4 (6%)
Cohesion Analysis**	3 (5%)	14 (20%)
Developmental Sentence Scoring (DSS)	3 (5%)	7 (10%)
Index of Productive Syntax (IPSyn)	1 (2%)	6 (8%)
Mean Length of Utterance- Morphemes (MLUM)**	55 (89%)	47 (66%)
Mean Length of Utterance- Words (MLUW)	27 (44%)	39 (55%)
Type Token Ratio (TTR)	33 (53%)	32 (45%)
Clausal Density/ Subordination Index**	11 (18%)	30 (42%)
Number of Subordinate Clauses	14 (23%)	25 (35%)
Number of Different Words (NDW)	37 (60%)	39 (55%)
Number of Total Words (NTW)	32 (52%)	41 (58%)
Number of Mazes	7 (11%)	16 (23%)
Percentage of Mazes**	6 (10%)	16 (23%)
Number of Elaborated Noun Phrases	7 (11%)	16 (23%)
Number of Story Grammar Components/Narrative Macrostructure**	12 (19%)	28 (39%)
Episode Structure of Narratives**	8 (13%)	24 (34%)
Grammaticality	19 (31%)	31 (44%)
Number of Verbs (e.g. mental verbs, linguistic verbs)	12 (19%)	16 (23%)
Number of Adverbs	10 (16%)	13 (18%)
Number of Adjectives	11 (18%)	12 (17%)
Tense	16 (26%)	20 (28%)
Total Number of Words (TNW)**	26 (42%)	42 (59%)
Mean Length of Utterance SUGAR (MLUSUGAR)**	13 (21%)	29 (41%)
Words per Sentence (WPS)	12 (19%)	22 (31%)
Clauses per Sentence (CPS)	17 (27%)	29 (41%)
SUGAR sub-analysis	8 (13%)	11 (15%)
Other	10 (16%)	13 (18%)

Note: Variables with ** are significant at $p < .05$ level

structure, $X^2(1, N = 133) = 7.912, p = .005$. Undergraduate coursework was more likely to use MLUM, $X^2(1, N = 133) = 9.38, p = .002$ than graduate coursework. Graduate coursework was more likely to metrics from the SUGAR analyses, such as Total Number of Words (TNW) $X^2(1, N = 133) = 3.93, p = .048$, and its form of MLU (MLUSUGAR), $X^2(1, N = 133) = 6.052, p = .014$. Full results can be found in Table 8.

Research Question 4: Perceptions of Student Preparedness

Respondents rated their students' perceived preparedness to perform LSA on a Likert-like scale ranging from "Not trained at all" to "Extremely well-trained". Distributions of rankings can be found in Figure 1. Differences in preparedness ratings for undergraduate and graduate stu-

dents were compared using a Mann Whitney U test, and graduate students were perceived to be better prepared than undergraduate students, $U = 2709.5, z = -3.52, p < .001$, with a moderate effect size, $r = .33$.

Research Question 5: Barriers

Respondents were asked to discuss the barriers faculty faced when teaching LSA. We used thematic analysis [40] to inductively distinguish notable topics and themes in participants' responses of perceived barriers to teaching LSA. We followed the procedures from Braun and Clarke [40] to analyze the open ended question on barriers faculty faced. The phases of our thematic analysis are located in Table 9. Responses were independently coded by two members of the research team. A third member of the team examined the responses and corresponding

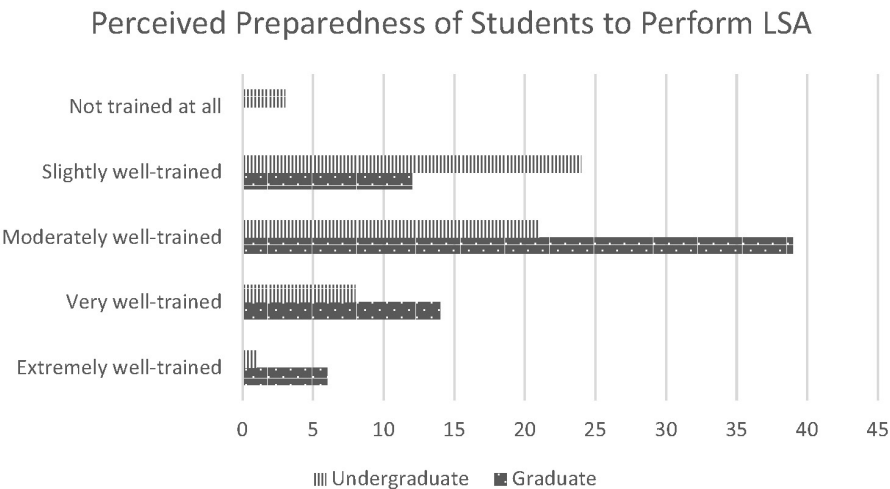


Figure 1. Perceived Preparedness of Students to Perform Language Sample Analysis

Table 9. Phases of Braun & Clarke (2006) Thematic Analysis of Faculty Barriers in Teaching LSA

Phase	Description of Methodology used in this Study
1. Familiarize self with data	The research team independently read and re-read the data and noted initial ideas.
2. Generate initial codes	Two members of the research team independently and systematically coded interesting features of the entire data set.
3. Searching for themes	The authors collated the codes into potential themes.
4. Reviewing themes	The authors reviewed themes in relation to initial codes and the entire data set.
5. Defining and naming themes	The authors generated clear definitions and names for each theme.
6. Producing the report	The authors selected compelling examples for each theme and related examples back to the research question.

codes. The authors then reviewed the codes and came to consensus to form the resulting themes. A total of $n = 78$ respondents provided information about barriers. Qualitative analysis identified four themes related to barriers to teaching LSA: 1) foundational knowledge deficits, 2) perceived clinical irrelevance, 3) student attitudes and learning styles, and 4) instructional challenges.

Foundational Knowledge Deficits

Respondents frequently discussed the barrier of students' foundational knowledge deficits including poor syntax, morphosyntax, and linguistic knowledge, with $n = 28$ responses coded with this theme. Participants noted a clear lack of prior instruction in foundations of language science resulting in the need to pre-teach basic concepts. Additionally, they noted that students struggled to understand how to analyze samples due to the students' lack of knowledge and limited problem-solving skills. One participant's response discussed this frustration *"Students come into our programs (at both [undergraduate] and [graduate] levels) with extremely weak grammar skills. They lack fundamental knowledge of the English language."* Another participant described how the lack of knowledge impacts their overall teaching of LSA *"It is impossible to teach someone to identify sentences when they don't know what a verb is, and the majority of my students don't know what a verb is (or a noun, etc.)"*.

Perceived Clinical Irrelevance

The second theme on faculty barriers to teaching LSA was perceived clinical irrelevance, with $n = 8$ responses coded with this theme. Many respondents reported that students were skeptical of the usefulness of LSA in clinical practice. For example, one respondent indicated *"I've never had a class tell me they were glad they learned language sample analysis. They consistently complain that it is not useful clinically."* This feeling by students is then solidified by the lack of LSA use in clinical placements

by clinical supervisors. One participant stated, *"Students aren't given opportunities to practice it in their clinical placements and think they won't need it"*. Faculty discussed the difficulty in "selling" LSA to students as they spend much of their time trying to convince students that LSA is worth their time.

Student Attitudes and Learning Styles

The third theme focused on student attitudes and learning styles as a barrier to teaching LSA, with $n = 8$ responses coded with this theme. Faculty expressed that students often had poor attitudes when completing language samples citing low motivation, limited beliefs in abilities, and lack of problem-solving skills. Faculty members discussed that the ambiguity of LSA was difficult for some students to understand. One participant remarked, *"It's VERY hard for the black-and-white thinkers who want one correct answer for everything"*. These attitudes lead students to prefer the use of standardized assessments to give concrete answers. For example, one participant commented, *"Frequently both undergraduate and graduate students want to rely on formal/standardized assessment to give them the answer rather than doing the work to find it themselves"*.

Instructional Challenges

There are two sub-themes for the final theme of instructional challenges faced by faculty when teaching LSA including time limitations and tool and resource limitations. The most frequently discussed instructional challenge was time, with $n = 24$ respondents including this theme. Respondents discussed limited instructional time and the time-intensive nature of LSA. One respondent indicated, *"Time is the greatest barrier. Three credits are insufficient for teaching assessment and treatment practices from grades K-12"*. Many faculty members commented on the challenges of providing adequate instruction and practice with LSA alongside other course objectives. In addition

to teaching and practice, many faculty discussed the time-consuming nature of grading and providing feedback across the different types of samples and analysis. An instructor discussed this frustration well, *“I have had to condense what I ask them to do a lot, due to the number of students in my classes and the amount of time it takes me to grade them and give feedback”*. The second sub-theme was tool and resource limitations, with $n = 9$ respondents including this theme. Faculty described the complexity of tools used (e.g., SALT, SUGAR, CLAN), software access issues, and lack of appropriate sample materials as barriers. Respondents discussed the complexity and cost of using tools to complete LSA, *“I tried CLAN this past year and it was too unwieldy. SALT gives the best analysis outcome but also requires extra training and cost”*. In addition to the complexity of tools, some discussed the difficulty in obtaining child samples, *“Finding good videos of children with language disorders on-line has been challenging”*.

DISCUSSION

We will discuss the results of the survey as it relates to faculty members' experiences in teaching LSA. We will compare the results of this survey to that of student experiences and describe implications for future instructional practices.

Summary of Faculty Members' Experiences

Faculty members reported using a variety of teaching techniques and assessment practices to address the processes and procedures of completing LSA for both undergraduate and graduate SLP students. First, faculty members discussed using a variety of student assessment methods such as exams, in-class activities, and case studies. These varied teaching techniques are to be expected for the complex nature of LSA and differences in instructor preference. While both undergraduate and graduate in-

structors both reported using play-based, conversation, and narrative language sampling most frequently, undergraduate instructors used more play-based contexts, whereas graduate instructors included more narrative and expository contexts. This may be due to the complexity level of the analysis needed for different contexts. Play-based and conversational contexts are usually less complex in terms of language used in comparison to narrative and expository contexts, and their difference in use may reflect the level of students' knowledge.

The most commonly taught methods of analysis included both SALT and SUGAR, with those who taught graduate students more likely to use SUGAR. Instructor preference for SUGAR over SALT could be attributed to attempts to minimize cost and maximize speed of analysis to mitigate negative student attitudes. There was a wide variety of analysis metrics that faculty taught. The most commonly taught metrics included MLUM, NDW, NTW, TTR, MLUW and total number of words. The differences in metrics for undergraduate versus graduate students is most likely due to the difference in contexts. Graduate faculty were more likely to teach metrics of cohesion, clausal density or subordination index, and narrative analysis, coordinating to the more frequent use of narrative and expository contexts and the more complex language structures elicited. Finally, Faculty members reported how prepared they believed their students were to complete LSA. Those faculty who taught graduate students rated their preparedness higher than those who taught undergraduate students. This result is to be expected as graduate students will have had more experiences both with content and real-world clinical situations in which language samples would be used or discussed.

Alignment with student LSA experiences

In prior literature, students have described their experiences in completing LSA in their coursework [20]. Undergraduate students reported completing language

samples primarily using conversational contexts, while graduate students reported using narrative contexts more often. In the current study, faculty who teach undergraduate coursework report teaching primarily play-based, conversational, and narrative contexts. Faculty who teach graduate coursework reported primarily teaching narrative, play-based, and conversational contexts in that order. While these reported experiences are somewhat aligned, faculty reported higher use of narrative and expository contexts than student respondents.

Previous work did not address analysis methods; however, student respondents reported metrics they used while performing LSA. Over 50% of student respondents reported completing the following analysis metrics including MLU, TNW, NDW, and TTR. Faculty members reported teaching LSA using varied analysis methods such as SALT, SUGAR, and their own clinician developed protocols. Graduate students were taught to use SUGAR at a higher frequency than undergraduate students. Given this variability in analysis methods, faculty respondents reported using varied analysis metrics. However, over half of the faculty respondents reported teaching MLUM, MLUW, TNW, NTW, NDW, and TTR. For graduate students, faculty reported teaching grammaticality and story grammar. The wide variety of student reported experiences and faculty instructional practices are aligned as there are few consistently used methods and metrics across programs.

Educational Implications

Faculty indicated several barriers that impact their ability to effectively prepare students to complete LSA. For example, faculty noted instructional challenges with the time-intensive and complicated nature of providing feedback and grading to students. This is manifested in the variety of assessment practices that faculty report using in their coursework, such as exams, individual and group projects, and activities.

In addition, faculty reported that many students come

in with limited foundational knowledge in morphosyntax, which influences the level of instructional depth that can be attained within the time constraints of meeting their course requirements. This may explain why rudimentary analysis metrics, such as MLU, TNW, and TTR are widely used, and analysis metrics that require greater foundational linguistic knowledge, such as clausal density, analyzing elaborated noun phrases, and examining different verb structures are used less frequently. Faculty's experiences with low student motivation and skepticism may stem from a steep barrier to entry for students, given their limited linguistic knowledge.

While faculty and graduate students report more varied LSA experiences as graduate students than as undergraduate students, less than half of instructors report using expository and persuasive contexts in their coursework [20]. Evidence-based recommendations support the use of expository language samples with older children, particularly adolescents [18,21]. Faculty members are likely aware of the evidence-based recommendations in the literature to use these contexts; however, they may not have adequate time to provide experiences with these contexts given the barriers listed above. This remains an area of improvement because research with practicing SLPs indicates that perceived knowledge and preparedness is associated with an increased likelihood of using LSA [4,9,10]. Faculty reported, unsurprisingly, that graduate students are more highly prepared than undergraduate students to undertake LSA; however, few report that their students are extremely well-prepared, and are instead best described as moderately well-trained.

Limitations and Future Directions

Limitations of this survey include validation of the instrument, response and non-response bias, and limited scope that excludes focus on pragmatic aspects of language and measures that explicitly examine dialect and language variation features. Although the original instru-

ment was tested [9,20], the psychometric properties of the adapted survey instrument have not been formally established, which may limit confidence in the construct validity of the measures. Faculty self-selected to participate following receipt of recruitment emails, and therefore, faculty who responded to this survey may have had greater interest in the topic. Given the 21% response rate and purposive recruitment strategy, the findings may over-represent faculty who are already engaged with LSA instruction and may not generalize to programs with less explicit child language coursework.

Despite a wide variety of potential metrics listed in the survey, the measures primarily focused on morpho-syntactic aspects of language with limited discourse and pragmatic analysis options. Although some respondents listed pragmatic measures in the “other” analysis metrics, this may not represent their use accurately. Furthermore, respondents were not asked to discuss the dialect of the sample(s) that are used in their coursework, so information about dialect and language variation is limited. Future directions should include examining the effectiveness of different instructional methods, student error patterns, and instructional approaches that may minimize the impact of the barriers in LSA instruction reported by faculty, such as limited foundational knowledge, maximizing the efficiency of language sample collection and analysis, and improving access to a variety of exemplars for instructional purposes.

CONCLUSION

While LSA is considered a key component of a comprehensive language evaluation, faculty report challenges with preparing students to undertake this important task. Continued examination of effective teaching practices and student experiences are needed to support preparedness of clinicians as they enter the field of speech-language pathology and are faced with assessing and treating

individuals with a wide variety of communication needs and differences.

REFERENCES

1. Miller JF, Andriacchi K, Nockerts A. Using language sample analysis to assess spoken language production in adolescents. *Lang Speech Hear Serv Schools*. 2016;47(2):99-112. doi:10.1044/2015_LSHSS-15-0051.
2. Fulcher-Rood K, Castilla-Earls A, Higginbotham J. Diagnostic decisions in child language assessment: findings from a case review assessment task. *Lang Speech Hear Serv Schools*. 2019;50(3):385-98. doi:10.1044/2019_LSHSS-18-0044.
3. Selin CM, Rice ML, Girolamo T, Wang CJ. Speech-language pathologists' clinical decision making for children with specific language impairment. *Lang Speech Hear Serv Schools*. 2019;50(2):283-307. doi:10.1044/2018_LSHSS-18-0017.
4. Wilder A, Redmond SM. Updates on clinical language sampling practices: A survey of speech-language pathologists practicing in the United States. *Lang Speech Hear Serv Schools*. 2024;55(4):1151-66. doi:10.1044/2024_LSHSS-24-00035.
5. Ramos MN, Collins P, Peña ED. Sharpening our tools: A systematic review to identify diagnostically accurate language sample measures. *J Speech Lang Hearing Res*. 2022;65(10):3890-907. doi:10.1044/2022_JSLHR-22-00121.
6. Costanza-Smith A. The clinical utility of language samples. *Perspect Lang Learn and Educ*. 2010;17(1):9-15. <https://doi.org/10.1044/lle17.1.9>.
7. Horton-Ikard R. Language sample analysis with children who speak non-mainstream dialects of English. *Perspect Lang Learn Educ*. 2010;17(1):16. doi:10.1044/lle17.1.16.
8. Ortiz JA, Nolasco JM, Huang YT, Chow JC. The use of language sample analysis to differentiate developmental language disorder from typical language in bilingual children: A systematic review and meta-analysis. *J Speech Lang Hearing Res*. 2024;67(10):3803-25. doi:10.1044/2024_JSLHR-24-00212.
9. Bawayan R, Brown JA. Language sample analysis consideration and use: a survey of school-based speech language pathologists. *Clin Arch Commun Disord*. 2022;7(1):15-28.
10. Pavelko SL, Owens RE, Ireland M, Hahs-Vaughn DL. Use of language sample analysis by school-based SLPs: Results of a nationwide survey. *Lang Speech Hear Serv Schools*. 2016;47(3):246-58. doi:10.1044/2016_LSHSS-15-0044.
11. Kemp K, Klee T. Clinical language sampling practices: results of a survey of speech-language pathologists in the United States. *Child Lang Teach Ther*. 1997;13(2):161-76. doi:10.1177/026565909701300204.
12. Klatte IS, van Heugten V, Zwisserlood R, Gerrits E. Language

- sample analysis in clinical practice: speech-language pathologists' barriers, facilitators, and needs. *Lang Speech Hear Serv Schools*. 2022;53(1):1-16. doi:10.1044/2021_LS_HSS-21-00026.
13. Westerveld MF, Claessen M. Clinician survey of language sampling practices in Australia. *Int J Speech Lang Pathol*. 2014;16(3):242-9. doi:10.3109/17549507.2013.871336.
 14. Fox CB, Israelsen-Augenstein M, Jones S, Gillam SL. An evaluation of expedited transcription methods for school-age children's narrative language: Automatic speech recognition and real-time transcription. *J Speech Lang Hearing Res*. 2021;64(9):3533-48. doi:10.1044/2021_JSLHR-21-00096.
 15. Heilmann J, Nockerts A, Miller JF. Language sampling: does the length of the transcript matter? *Lang Speech Hear Serv Schools*. 2010;41(4):393-404. doi:10.1044/0161-1461(2009/09-0023).
 16. Liu H, MacWhinney B, Fromm D, Lanzi A. Automation of language sample analysis. *J Speech Lang Hearing Res*. 2023;66(7):2421-33. doi:10.1044/2023_JSLHR-22-00642.
 17. Pavelko SL, Price LR, Owens RE. Revisiting reliability: Using sampling utterances and grammatical analysis revised (SUGAR) to compare 25- and 50-utterance language samples. *Lang Speech Hear Serv Schools*. 2020;51(3):778-94. doi:10.1044/2020_LSHSS-19-00026.
 18. Pezold MJ, Imgrund CM, Storkel HL. Using computer programs for language sample analysis. *Lang Speech Hear Serv Schools*. 2020;51(1):103-14. doi:10.1044/2019_LSHSS-18-0148.
 19. Tobin J, Nelson P, MacDonald B, Heywood R, Cave R, Seaver K, et al. Automatic speech recognition of conversational speech in individuals with disordered speech. *J Speech Lang Hearing Res*. 2024;1-10. doi:10.1044/2024_JSLHR-24-00045.
 20. Bawayan R, Lenhart MH, Van Doren A. A preliminary survey of SLP students' language sample analysis experiences. *Teach Learn Commun Sci Disord*. 2025;9(3). doi:10.61403/2689-6443.1372.
 21. Lenhart MH, Timler GR, Pavelko SL, Bronaugh DA, Dudding CC. Syntactic complexity across language sampling contexts in school-age children, ages 8–11 years. *Lang Speech Hear Serv Schools*. 2022;53(4):1168-76. doi:10.1044/2022_LSHSS-21-00187.
 22. Nippold MA, Hesketh LJ, Duthie JK, Mansfield TC. Conversational versus expository discourse. *J Speech Lang Hearing Res*. 2005;48(5):1048-64. doi:10.1044/1092-4388(2005/073).
 23. Bernstein Ratner N, Han Y, Yang JS. Should we stop using lexical diversity measures in children's language sample analysis? *Am J Speech Lang Pathol*. 2024;33(4):1986-2001. doi: 10.1044/2024_AJSLP-23-00457.
 24. Yang JS, Rosvold C, Bernstein Ratner N. Measurement of lexical diversity in children's spoken language: computational and conceptual considerations. *Front Psychol*. 2022;13:905789. doi:10.3389/fpsyg.2022.905789.
 25. Gilkerson J, Richards JA. The power of talk. Impact of adult talk, conversational turns and TV during the critical 0-4 years of child development: Boulder, CO: LENA Foundation; 2009.
 26. Flippin, M. Student perspectives on learning language sample analysis using LENA. *Teach Learn Commun Sci Disord*. 2023;7(1):6. doi:10.30707/TLCSD7.1.1675490380.842994.
 27. Kroecker J, Lyle K, Allen K, Filippini E, Galvin M, Johnson M, et al. Effect of student training on the quality of children's language samples. *Contemp Issues Commun Sci Disord*. 2010;37(Spring):4-13.
 28. Ogiela DA, Aldrich SA. Better, faster, stronger: Outcomes of a language sample transcription and coding training study. *Teach Learn Commun Sci Disord*. 2023;7(3). doi:10.61403/2689-6443.1289.
 29. Bitetti D. Accuracy of undergraduate students' language sample analysis in online and face-to-face courses. *Perspect ASHA Spec Interest Groups*. 2023;8(6):1422-31. doi:10.1044/2023_PERSP-23-00033.
 30. Sharma A, Minh Duc NT, Luu Lam Thang T, Nam NH, Ng SJ, Abbas KS, et al. A Consensus-Based Checklist for Reporting of Survey Studies (CROSS). *J Gen Intern Med*. 2021;36(10):3179-87. doi:10.1007/s11606-021-06737-1.
 31. American Speech-Language-Hearing Association. ASHA EdFind - Find graduate programs in speech-language pathology and audiology [Internet]. n.d. [Cited 2026 Mar 20] Available from: <https://find.asha.org/ed/#sort=relevancy>
 32. Sauerwein AM, Burris MM. Augmentative and alternative communication course design and features: A survey of expert faculty and instructors. *Am J Speech Lang Pathol*. 2022;31(1):221-38. doi:10.1044/2021_AJSLP-20-00070.
 33. Schmedding-Bartley JL, Karasinski C. Communication sciences and disorders faculty perceptions of interprofessional education. *Teach Learn Commun Sci Disord*. 2020;4(2):5. doi:10.30707/TLCSD 4.2/MCHF8614.
 34. Miller JF, Iglesias A. Systematic Analysis of Language Transcripts (SALT), English & Spanish (Version 20) [Computer software]. Salt Software LLC; 2008.
 35. Pavelko SL, Owens Jr RE. Sampling Utterances and Grammatical Analysis Revised (SUGAR): New normative values for language sample analysis measures. *Lang Speech Hear Serv Schools*. 2017;48(3):197-215. doi:10.1044/2017_LSHSS-17-0022.
 36. MacWhinney B. The CHILDES Project: Tools for Analyzing Talk. 3rd ed. Volume I: Transcription format and programs. Mahwah (NJ): Lawrence Erlbaum Associates; 2000.
 37. Gillam SL, Gillam RB, Fargo JD, Olszewski A, Segura H. Monitoring indicators of scholarly language: A progress-monitoring instrument for measuring narrative dis-

- course skills. *Commun Disord Q.* 2017;38(2):96-106. doi:10.1177/1525740116651442.
38. Petersen DB, Spencer TD, Konishi A, Sellars TP, Foster ME, Robertson D. Using parallel, narrative-based measures to examine the relationship between listening and reading comprehension: A pilot study. *Lang Speech Hear Serv Schools.* 2020;51(4):1097-111. doi:10.1044/2020_LSH
- SS-19-00036.
39. Crowley C, Biagorri, M. The school-age language assessment measures [Internet]. 2014 [Cited 2026 Mar 20]. Available from: <https://www.leadersproject.org/school-age-language-assessment-measures-slam/>
40. Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol.* 2006;3(2):77-101. doi:10.1191/1478088706qp063oa.