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Using a Database of Typical Speakers to Describe the Expository Language Skills of Children with Language Impairment

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USING A DATABASE OF TYPICAL SPEAKERS TO DESCRIBE THE EXPOSITORY LANGUAGE SKILLS OF CHILDREN WITH LANGUAGE IMPAIRMENT

by

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ABSTRACT

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by
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Purpose. This study examined the expository language skills of older students with language impairment (LI) in relation to a large database of typically developing (TD) students. The purpose of the study was to investigate whether comparing language samples to the database allowed users to distinguish between adolescents with LI and those with typical language, and develop individual profiles of relative strengths and weaknesses in children with LI.

Methods. School speech-language pathologists elicited expository language samples from high school students with LI (N = 9; mean age = 16;8 [years;months]) by asking them to explain how to play their favorite game or sport as if speaking to a naïve listener. Language samples were transcribed using Systematic Analysis of Language Transcripts (SALT; Miller & Iglesias, 2012), and analyses were completed to compare the performance of students with LI to a large database of samples from TD children in nine language measures. To develop individual expository language skill profiles of relative strengths and weaknesses, the scores of students with LI were compared to their own overall performance on the expository task. Individual profiles were compared to determine whether subgroups of LI appeared.

Results. Analysis revealed distinct profiles of relative strengths and weaknesses for eight of the nine participants. One student with LI demonstrated a relatively equal level of performance

across all language measures. When individual participants' scores were compared to the database of TD peers matched in chronological age, all adolescents with LI demonstrated performance at least one standard deviation lower than the database mean in at least two language measures.

Conclusions. Expository language sample analysis facilitated the development of individual profiles of strengths and weaknesses in this sample of adolescents with LI. Analysis of expository performance in a larger sample of older students with LI will help determine the number and compositon of linguistic profiles, which specific language measures are most effective in differential diagnosis of LI, and whether this expository task is effective in distinguishing students with LI from those with TD language. Due to the small sample size, the results of this study should be considered preliminary and interpreted with caution.

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LIST OF ABBREVIATIONS

ASD	Autism Spectrum Disorder
CA	Chronological Age
CD	Clausal Density
CELF-5	Clinical Evaluation of Language Fundamentals – Fifth Edition
ESS	Expository Scoring Scheme
FGS	Favorite Game or Sport
IEP	Individualized Education Program
IRB	Institutional Review Board
LI	Language Impairment
LSA	Language Sample Analysis
MLCU	Mean Length of C-Unit
NDW	Number of Different Words
NTW	Number of Total Words
SALT	Systematic Analysis of Language Transcripts
SD	Standard Deviation
SDUSD	San Diego Unified School District
SLI	Specific Language Impairment
SLP	Speech-Language Pathologist
TD	Typically Developing
UWM	University of Wisconsin- Milwaukee
WPM	Words per Minute

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CHAPTER 1

Introduction

Individuals with language impairment (LI) have significant difficulty with the comprehension and production of language across modalities, resulting in impairment of academic and social functioning (Paul & Norbury, 2012). Specific language impairment (SLI) is defined by persistent deficits in language acquisition and use in the absence of any cognitive, perceptual, or pervasive developmental deficits (Paul & Norbury, 2012). Tomblin, Records, Buckwalter, Zhang, Smith, and O'Brien (1997) reported an overall prevalence rate of SLI of 7.4% from a study of 7,218 English-speaking kindergarten children living in the Midwestern United States. When language abilities are substantially below age expectations but are on level with the individual's cognitive ability, the disorder is considered a nonspecific language impairment (NLI; Paul & Norbury, 2012). Many developmental disorders, such as autism spectrum disorder (ASD), down syndrome, and fragile X syndrome, often have concomitant language impairments as a part of the phenotype (Pinborough-Zimmerman, Satterfield, Miller, Bilder, Hossain, & McMahon, 2007; Klusek, Martin & Losh, 2013; Finestack & Abbeduto, 2010).

Several investigators have documented that LI tends to be lifelong, with language difficulties usually persisting into adolescence (Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998; Catts, Fey, Tomblin, & Zhang, 2002; Durkin, Simkin, Knox, & Conti-Ramsden, 2009). In a study of 71 children identified with LI at age four and followed into to adolescence, Stothard et al. (1998) found that most children who had LI at age 5;6 (years;months) continued to have significant language difficulties in all aspects of spoken and written language at age 15-16 years. In a sample of 570 children followed from kindergarten through fourth grade, Catts et al. (2002)

found that most children with LI continued to have significant reading difficulty. Durkin, Simkin, Knox, and Conti-Ramsden (2009) reported on the outcomes of 120 adolescents with a history of SLI and 121 typically developing (TD) adolescents in their final year of mandatory secondary school (mean age = 17;4). The authors found that educational attainment was consistently lower in adolescents with a history of SLI than in their TD peers, and that three-quarters of the students with SLI continued to receive special education services.

Academic success is not the only concern; LI can also have a profound impact on a child's emotional wellbeing and ability to interact with peers socially (Wadman, Durkin, & Conti-Ramsden, 2008; 2011). In a study comparing 54 adolescents with SLI ages 16 – 17 years with 54 adolescents with TD language, Wadman, Durkin, and Conti-Ramsden (2008) documented that those with SLI had significantly lower global self-esteem scores than TD peers, and tended to experience more shyness, despite a desire for social interaction. A second study by Wadman, Durkin, and Conti-Ramsden (2011) investigated emotional engagement in close relationships in 90 adolescents with SLI and 91 adolescents with TD language, finding that the SLI group scored significantly lower on measures of emotional engagement than the TD group.

Subgroups of Children with Language Impairment

Bloom and Lahey (1978) separated language into three distinct yet overlapping domains: form (grammar), content (vocabulary) and use (pragmatics). While many language assessments have been developed for the purpose of measuring these theoretical aspects, there is limited empirical data to substantiate the multidimensionality of language. Still, the best practice for diagnosis of LI is to first identify the presence of a disorder and then describe a

profile of the individual's strengths and weaknesses related to these dimensions (Weiss, Tomblin, & Robin, 2002).

Researchers have documented that performance measures do indeed reveal distinct profiles of language ability (Aram & Nation, 1975; Bishop & Edmundson, 1987; Conti-Ramsden, Crutchley, & Botting, 1997; Conti-Ramsden & Botting, 1999; Tomblin & Zhang, 2006). Aram & Nation (1975) found six patterns of language performance in a group of 47 children with LI. In a study that used a battery of language measures to assess 87 children with LI at the ages of 4;0, 4;6, and 5;6, Bishop & Edmundson (1987) delineated five patterns of language difficulties that were not stable over time; data showed that from age 4;0 to age 4;6, over half of the participants moved to a different pattern category. Conti-Ramsden, Crutchley, & Botting (1997) investigated the extent to which norm-referenced psychometric tests would differentiate subgroups among 242 7-year-old children with SLI, thereby identifying six distinct subgroups of children with language difficulties. Collecting data from the same 242 children at age 8, Conti-Ramsden and Botting (1999) found that while there was stability in the patterns of difficulties categorized into the six subgroups, there was considerable instability in group membership over time, with 45% of the children moving across subgroups. Tomblin and Zhang (2006) documented that when multiple standardized language assessments were given to children at kindergarten and second, fourth, and eighth grades, a two-dimensional model featuring vocabulary and sentence use best fit the data.

While this research demonstrates that distinct subgroups of children with LI do exist, there remains uncertainty regarding the profiles of subgroups, the number of subgroups, and the stability of group membership over time. These studies used general oral language

performance measures taken from norm-referenced assessments. Because high sensitivity and specificity are imperative for identification of a disorder, norm-referenced tests are widely considered the gold standard; however, norm-referenced tests are relatively ineffective in describing the nature of the disorder (McCauley & Swisher, 1984). When seeking to develop profiles to inform treatment planning and progress monitoring, clinicians frequently turn to naturalistic measures such as language sampling. Because LI is typically diagnosed in early childhood, SLPs working with older students are rarely charged with the task of identifying the disorder; thus, assessment with older students is chiefly used to provide a rich description of a child's language ability in realistic contexts.

Language Sample Analysis as a Descriptive Assessment

Language sample analysis (LSA) is a measure of a speaker's typical language use in a functional context (Miller, Andriacchi, & Nockerts, 2011). Through LSA, a clinician can capture a representation of a child's language in a meaningful task, making it an authentic measure. LSA is highly descriptive, and allows clinicians to examine multiple aspects of language, such as vocabulary (e.g., lexical diversity), grammar (e.g., mean length of utterance), speaking rate, discourse formulation, and discourse organization (Leadholm & Miller, 1992). For instance, Heilmann and Malone (2014) collected and analyzed 235 expository language samples from TD students, and classified language measures into four dimensions: syntactic complexity, expository content, discourse difficulties, and lexical diversity. LSA is also reliable and valid in identifying children who have impairments: by comparing language production measures from the conversational language samples of 244 children with SLI and 244 samples from TD peers,

Heilmann, Miller, and Nockerts (2010) correctly identified 78% of children who had a true impairment and 85% of the children with typical language development.

Elicitation of language samples may be done using a variety of methods selected to be functional and engaging for the child. Conversational discourse is a dialogue in which people take turns sharing information and ideas, making comments, and asking questions to clarify and expand upon each other's statements (Nippold, 2010). This type of exchange is often generated through play with younger children, and through conversations with an adult partner with older children (Miller, Andriacchi, & Nockerts, 2011). Narrative discourse, language used to tell a story, can be elicited by asking a child to recount a favorite movie or relate a memorable experience. Persuasive discourse is the use of language to convince the listener to take a certain action or adopt a certain opinion. A child might use this type of discourse when prompted to write an essay for or against the introduction of mandatory school uniforms. Expository discourse, the use of language to convey information, can be elicited by having a child describe a process, like how to cook macaroni and cheese, or explain a scientific concept or historical event (Nippold, 2010).

Selecting a task to elicit a language sample calls for consideration of its relatedness to the curriculum as well as how motivating the task is for the child. For older students, the task must reflect the curriculum of their advanced education level and provide a challenge to engage the student. Expository discourse is the predominant genre used in the classroom from fourth grade on, as students are frequently expected to summarize and explain new and complex material (Paul & Norbury, 2012; Nippold, 2010). The Common Core Standards for English Language Arts (National Governors Association Center for Best Practices, 2010) require

that when speaking, students in Grades 9-10 "present information, findings, and supporting evidence clearly, concisely, and logically" (p. 50). When writing, students in grades 9-10 are expected to generate "informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes" (p. 65).

Expository discourse is sensitive to increases in language competence over time, and generates more complex language than conversational discourse. In a study by Nippold, Hesketh, Duthie, and Mansfield (2005) that compared expository and conversational discourse from 120 TD speakers, ages 7 to 49 years, it was found that syntactic complexity increased with chronological age throughout childhood and adolescence, and into early adulthood. In the same study, results from all age groups showed greater syntactic complexity in expository discourse than in conversational discourse. In a sample of 444 adolescents with SLI, NLI, and TD language, Nippold, Mansfield, Billow and Tomblin (2008) found that all groups had higher mean length of T-unit and greater use of nominal, relative, and adverbial clauses during an expository task than a conversational task.

Studies of expository discourse have demonstrated its sensitivity to differences in students with LI and their TD peers (Nippold et al., 2008; Scott & Windsor, 2000). In the previously mentioned study of 444 adolescents with SLI, NLI, and TD language, Nippold, et al. (2008) found that while no group differences appeared in a conversational discourse task, an expository discourse task revealed significant differences between groups. The TD language group had a greater mean length of T-unit than both the SLI and NLI groups, and greater relative clause use than the NLI group. Scott and Windsor (2000) investigated differences in general language performance measures among 20 students with LI, 20 students matched for

chronological age, and 20 students matched for language ability in both narrative and expository contexts. Students with LI performed significantly less well than chronological age matched children in measures of productivity, grammatical complexity, and extent of grammatical error.

For clinical application of expository LSA to be realistic, a practical and time-efficient way for SLPs to objectively evaluate age-appropriate performance must be established. In answer to the need for normative data, Heilmann and Malone (2014) used the software program Systematic Analysis of Language Transcripts (SALT; Miller & Iglesias, 2012) to create a database of expository language samples from 235 TD students in Grades 5, 6, 7, and 9 using a favorite game or sport protocol. The current study aimed to determine whether comparing language samples from children with LI to the database would allow users to identify differences in speakers with LI and typical language, and whether the database assisted in developing profiles of a child's relative strengths and weaknesses. Specific research questions included:

1) Do children with LI perform significantly worse than their TD peers on an expository language sample task?
2) Does the expository language sampling task facilitate the development of profiles in children with LI?
3) If so, do the profiles differ across the children, or are they the same? Is there heterogeneity in the phenotype of LI?

CHAPTER 2

Methods

Participants

Participants were nine high school students with LI. Their age range was 14;11 to 18;6 (mean = 16;8; SD = 1;2). Five students attended high schools in southeastern Wisconsin; four attended schools in the San Diego Unified School District (SDUSD). Six of the nine participants were female.

Selection Criteria. To be eligible for the study, participants were required to have an identified LI and normal hearing according to parent report. A student was considered to have an LI if the student's Individualized Education Program (IEP) included speech language pathology services for expressive oral language skills. A second criterion for eligibility was that the student's SLP judged that he or she was capable of producing a language sample that was at least one minute in length.

Students were ineligible for the study if they had other defined developmental disabilities listed in their IEP (e.g., ASD, down syndrome, Williams syndrome, intellectual disability, etc.), or if they had limited proficiency in spoken English, as determined by current enrollment in school services for English Language Learning. Because the language of children who are not fluent in English has similar characteristics to that of children with LI, including language samples from non-fluent English speakers would have introduced a confounding variable. The checklist used to document each participant's eligibility can be found in Appendix D.

Participant Recruitment

Older children with LI are primarily served in the public schools. Dr. Heilmann, the thesis advisor, contacted school SLPs at nine school districts in Wisconsin and the lead SLP at SDUSD. Seven of the Wisconsin school districts agreed to participate, along with SLPs at 15 schools in SDUSD. For those districts agreeing to participate, Dr. Heilmann and I worked with the local administrators to ensure that all school-based IRB requirements were met. Most schools required additional documentation of study procedures.

Each SLP attempted to collect language samples from at least two children with LI, with some SLPs attempting to recruit up to four participants. In total, 66 children with LI were asked to participate in the study. Of those, nine agreed to participate. Many students and parents were hesitant to participate in the study. Anecdotally, we noticed that many parents were concerned about their children missing instructional time. Several students simply did not want to complete the expository task.

Procedure

The current study used the elicitation protocol described by Heilmann and Malone (2014), which was adapted from Nippold, Hesketh, Duthie and Mansfield (2005). Each participant was asked to explain how to play a favorite game or sport to a naïve listener. By allowing participants freedom to choose a topic based on their individual interests and personal knowledge, the Favorite Game or Sport (FGS) protocol presumably elicits more meaningful productions and increases participants' motivation to complete the task. This procedure is likely to be free of cultural bias because all cultures have games and sports specific to them,

and children may use their own cultural experience to make their selection (Heilmann & Malone, 2014). Moreover, the FGS task coincides with academic expectations for middle and high school students. For instance, according to Wisconsin's Model Academics Standards for Physical Education, students in Grades 6-8 are expected to "describe the critical elements of a sport-specific skill (e.g. a basketball free throw or a forearm pass)." Students are also required to "explain at least two game tactics involved in playing net/wall sports (e.g., tennis, badminton, volleyball, etc.) . . . [and] . . . at least two game tactics involved in invasion sports (e.g., soccer, basketball, handball, etc."; Wisconsin Department of Public Instruction, Student Services/Prevention, and Wellness Team, 2010, p. 55). Standards for Grades 9-12 require students to "describe offensive, defensive, and transitional skills and strategies in team and individual sports" as well as "describe the impact of new skills and tactics . . . [and] . . . explain appropriate tactical decisions in a competitive activity" (p. 67; p. 69).

Whereas Nippold et al. (2005) had participants begin speaking immediately upon presentation of the FGS task, providing a single prompt to discuss strategies, Heilmann and Malone (2014) introduced planning materials and time prior to beginning the oral exposition. Because the language samples in the present study were compared to the database of samples described in Heilmann and Malone (2014), the same elicitation protocol was used. Students were given an outline identifying the eight key components of the expository and descriptions of what information was expected for each component (see Appendix A). Time was provided for students to plan for each component of their explanation by writing and/or drawing. If a student stopped writing or drawing before planning for each component was complete, the examiner was instructed to prompt with, "Please do some planning for [topic name(s)]."

Students were encouraged to refer to their written plan while speaking. Examiners read from a script (see Appendix B) that clearly conveyed the expectation that participants would provide a complete and detailed explanation that was at least 5 minutes in length. If students finished speaking before five minutes had elapsed, examiners were instructed to prompt with, "Is there anything else you can tell me?" Examiners digitally recorded all language samples.

Data Transcription

All samples were transcribed using the SALT Software program. Utterances were segmented into communication units (C-units; Loban, 1976). A C-unit is comprised of an independent clause and all associated subordinate clauses. After initial transcription was completed, clausal density and Expository Scoring Scheme (ESS), which is further described below, were coded by hand. The thesis advisor listened to each sample and reviewed all transcripts and codes to ensure that they were completed accurately. Discrepancies were discussed and resolved, with the final decision made by the thesis advisor.

Language Measures

The SALT program was used to generate multiple language measures for each sample. All measures were limited to C-units that were complete and intelligible. Analysis only included measures that have been documented in the literature as being indicative of development in older students and/or sensitive to differences between children with LI and their peers with typical language.

Mean Length of C-unit (MLCU). Scott and Stokes (1995) investigated the sensitivity of several syntactic measures in the language of older children and reported that the average number of words in a child's C-unit is representative of overall language growth, particularly syntactic development. Studies of syntactic complexity in expository language samples have documented that measures of utterance length (such as MLCU) increased with chronological age throughout the school-age years and into early adulthood (Nippold et al., 2005). For the present study, the MLCU in words was calculated for each language sample.

Clausal Density (CD). Scott (1988) documented that as school-age children used a greater number of subordinate clauses, the length and complexity of their utterances increased. Although MLCU reflects children's use of subordinate clauses, frequency of subordinate clause production yields a more direct measure of children's use of complex syntax than MLCU (Heilmann & Malone, 2014). Previous studies have recorded that young children seldom use subordinate clauses (Scott, 1988), and that use of subordinate clauses gradually increases during school-age years and into adulthood (Loban, 1976; Nippold et al., 2005, 2007). In the current study, CD was calculated for each transcript using the procedures described in Nippold et al. (2005) and Heilmann and Malone (2014): the sum of the total number of independent clauses and finite subordinate clauses was divided by the total number of C-units.

Lexical Diversity. The richness of vocabulary that children use can be assessed using measures of lexical diversity, which are thought to be indicative of overall vocabulary skill development (Leadholm & Miller, 1992). Watkins, Kelly, Harbers, and Hollis (1995) demonstrated that calculating the number of different words (NDW) in a predetermined sample size was most successful in distinguishing children with LI. For the present study, the

NDW was calculated for the first approximately 375 intelligible words in each sample. Whereas all other language measures were compared to database scores based on entire transcripts, the NDW measure was compared to database samples matched in length (i.e., the NDW in the first 375 words of a participant's sample was compared to the NDW in the first 375 words of age-matched database samples).

Productivity. Productivity assesses the quantity of information generated and the efficiency with which the child produced the sample. Researchers have documented that children with LI tend to generate substantially shorter samples than their TD peers in both narrative (Strong & Shaver, 1991) and expository discourse (Scott & Windsor, 2000). Number of total words (NTW) was calculated for each sample by summing the number of main body words. Number of total C-units (TCU) was calculated by summing the number of complete and intelligible C-units in each sample.

Expository Scoring Scheme (ESS). Discourse-level measures assess the expression of text-level concepts that transcend the individual utterance. Each sample was coded using the ESS rubric developed by Heilmann and Malone (2014) to document how thoroughly the student conveyed each of the eight aspects of the expository sample outlined on the planning sheet (see Appendix C for a copy of the rubric used). Samples were also assigned two overall ratings on the sophistication and appropriateness of the vocabulary used in the sample (terminology) and the level of coherence throughout the explanation (cohesion; Halliday & Hasan, 1976). Scores were assigned for performance as follows: 1 = immature/minimal use, 3 = emerging/inconsistent, 5 = proficient. A score of 2 or 4 was given if the student's performance

was judged to be between two of the anchors. If a student failed to address a particular element of the rubric, a score of 0 was given.

Verbal fluency. The speed with which a student produced the sample was measured in words per minute (WPM), which was calculated by dividing the total number of words in the sample by the elapsed time. A faster speaking rate may indicate that a student was able to organize and express his/her ideas more fluently and coherently (Leadholm & Miller, 1992). The second measure of verbal fluency was obtained by coding interruptions in productions, or *mazes*, including false starts, reduplications, interjections, and reformulations (Loban, 1976). Guo, Tomblin, and Samelson (2008) documented that children with LI produce substantially more mazes than do children with typical language. Maze words as a percentage of total words was calculated for each sample by dividing the number of words coded as mazes by the number of total words including mazes.

Errors and omissions. Investigators have described how children with LI produce considerably more grammatical errors in expository discourse when compared to their same-aged peers with typical language (Scott, 1995) as well as their language-matched peers (Scott & Windsor, 2000). Four separate measures of discourse errors were generated using SALT: errors at the word level (e.g., overgeneralizations and incorrect word choice); syntactic errors at the utterance level (i.e., utterances that do not make syntactic sense); omissions of bound morphemes that occur in obligatory contexts; and omissions of words that occur in obligatory contexts. The errors and omissions measure was calculated by summing these four measures for each sample.

Table 1. Summary of Language Measures.

Language Measure	*Description*
Mean length of C-unit	The average number of words in a child's C-unit reflects syntactic complexity.
Clausal density	The frequency of subordinate clause production reflects syntactic complexity.
Number of different words (NDW)	The number of different words in a predetermined sample size measures the diversity of a child's vocabulary.
Number of total words (NTW)	The total number of words in the sample is a measure of productivity.
Total number of C-units	The total number of C-units in a sample measures productivity.
Expository Scoring Scheme (ESS)	This score documents how thoroughly and cohesively the child described the components of the expository.
Mazes	The number of interruptions in productions is a measure of verbal fluency.
Words per minute (WPM)	The speed with which a child produces the sample measures verbal fluency.
Errors and omissions	The number of errors and omissions reflects difficulty with discourse production.

Dimensions of Language Represented by Language Measures

For each transcript, each of the measures described above were generated to document multiple dimensions of language. Heilmann and Malone (2014) documented that expository language sample measures captured four distinct dimensions of oral language related to syntactic complexity, expository content, discourse production, and lexical diversity. Syntactic complexity can be documented by MLCU, which appears to provide an overall approximation of children's complex syntax use. Expository content can be measured by ESS and NTW. Evaluating the content and organization of each transcript with the ESS rubric provides a descriptive record of the child's overall ability to produce an expository sample. Because many items on the ESS award higher scores for providing greater detail, it is not surprising that

productivity measures like NTW are related to expository content. Heilmann and Malone (2014) reported that when children had the capacity to produce longer and more fluent explanations, they were also likely to produce samples that were well-organized. Children's use of mazes reflects difficulties with discourse production (Leadholm & Miller, 1992; Heilmann & Malone, 2014). Together, the use of mazes and the errors and omissions measure can be used to describe a child's skill or difficulty with production of expository discourse. Lexical diversity is primarily measured by NDW, which was calculated for the first 375 words in each transcript.

Data Analysis

SALT 2016 Software was used to compare the performance of the nine participants to the performance of age-matched peers with TD language in the same exposition task. Each language sample was matched to a subset of database samples from TD children who were within six months of the chronological age (CA) of the participant at the time the sample was elicited. Eight of the nine language measures, including MLCU in words, clausal density, NTW, TCU, ESS, mazes, WPM, and errors and omissions, were compared to database scores based on entire language transcripts. Thus, for these eight measures, each participant's sample was compared to samples from children matched in CA, regardless of transcript length. In order to accurately compare measurements of lexical diversity, however, samples were matched based on both CA and transcript length. For NDW only, samples were cut to approximately 375 words and compared to the same number of words in samples from children of the same CA. Two samples from students with LI were less than 375 words in total length; for these, the NDW was calculated for the entire transcript and compared to database samples cut to an equivalent length.

CHAPTER 3

Results

Participant Scores

Individual scores and the development of expository language profiles for each participant are presented in Tables 3 through 11. Each table describes the following data: scores achieved by each student with LI in each of the nine language measures (*Transcript Value*); the mean scores of database transcripts from children matched in CA to each participant (*Database Mean*); the number of standard deviations (SD) the participant scored above or below the database mean (*SD from Database*); and whether each language measure was a strength or weakness relative to the child's own average range of performance. The process for determining relative strengths and weaknesses for each student is described later in this chapter.

Performance of Children with LI Compared to TD Peers

Compared to the database of age-matched peers, the nine students with LI generally performed in the average or below average range on all language measures. Table 2 displays the number of children with LI who scored at least one SD lower or higher than the mean, or within one SD of the database mean for TD children matched in age.

Every participant scored at least one SD below the database mean in at least two of the nine language measures. The majority of children scored within normal limits in six of the nine language measures: MLCU, CD, NDW, NTW, TCU, and Mazes. The lowest-performing language

measure was WPM, with six of the nine students with LI scoring more than one SD lower than the database mean, followed by ESS, with five participants scoring more than one SD below the mean for TD peers. Only two students had any scores more than one SD higher than the database mean: Participant 3 had significantly fewer mazes, errors and omissions in her language sample than same-age TD children; and Participant 7 used a significantly higher proportion of subordinate clauses than his TD peers.

While no participants scored within the average range on every language measure, the overall composite scores (the average of each individual's language measure scores) for seven of the nine participants ended up less than one SD below the database mean. This demonstrates the variability among each student's scores for separate language measures.

Table 2. Number of children with LI scoring below, above, or within 1 SD of database (DB) mean of TD children in each language measure and composite score.

Language Measure	**Scored more than 1 SD below DB mean**	**Scored within +/-1 SD of DB mean**	**Scored more than 1 SD higher than DB mean**
MLCU – Words	3	6	-
Clausal Density	3	5	1
Lexical Diversity	3	6	-
NTW	1	8	-
TCU	2	7	-
ESS	5	4	-
Mazes	3	5	1
WPM	6	3	-
Errors and Omissions	4	4	1
Composite Score	2	7	-

Development of Expository Language Skill Profiles

To develop an expository language profile for each participant, I compared participants' performance in each of the language measures to their own overall performance on the

expository task. I generated an overall composite score for each child's performance on the language sample by taking the average of the child's nine *SD from Database* values. Measures for which the child's *SD from Database* value was at least one SD higher or lower than their composite score were classified as a relative strength or weakness for the child's profile, respectively. Measures for which the *SD from Database* value was within one SD of the child's overall score were considered to be representative of the child's average performance.

Because higher percentages of mazes and errors or omissions are indicative of more difficulty with discourse production, the sign for each of these *SD from Database* values was inverted before composite scores were calculated. In other words, the *SD from Database* value for a transcript with a higher number of maze words as a percentage of total words than the database mean was changed from a positive to a negative score in order to reflect that this score represented below average performance in discourse production.

Table 3. Expository Profile for Participant 1. (CA: 14;11; based on comparison to 63 children)

Language Measure	Transcript Value	SD From Database	Database Mean	Relative Strength/Weakness
MLCU - Words	12.24	-0.19	12.66	-
Clausal Density	1.83	0.73	1.67	Strength
Lexical Diversity* (NDW)	151	-0.59	160.30	-
NTW	551	-0.41	725.11	-
TCU	45	-0.39	56.94	-
ESS	22	-4.8	33.5	Weakness
Maze Words as % of Total Words	14%	-1.57	8.76%	-
Words per Minute	117.79	-1.01	143.80	-
% Utterances with Errors	11.1%	0.09	11.90%	-
Average SD from Database Mean		**-0.9044**		

* (Based on comparison to 30 children; samples matched at 472 total words)

Table 4. Expository Profile for Participant 2. (CA: 15;11; based on comparison to 41 children)

Language Measure	Transcript Value	SD From Database	Database Mean	Relative Strength/Weakness
MLCU - Words	12.09	-0.46	12.97	-
Clausal Density	1.46	-1.13	1.70	-
Lexical Diversity* (NDW)	141	0.14	139.16	-
NTW	689	-0.16	748.93	-
TCU	57	-0.08	59.76	-
ESS	31	-0.72	35.61	-
Maze Words as % of Total Words	8.4%	0.11	9.05%	-
Words per Minute	138.56	-0.86	159.41	-
% Utterances with Errors	21.1%	-1.01	13.29%	-
Average SD from Database Mean		**-0.4633**		

* (Based on comparison to 37 children; samples matched at 374 total words)

Table 5. Expository Profile for Participant 3. (CA: 15;3; based on comparison to 76 children)

Language Measure	Transcript Value	SD From Database	Database Mean	Relative Strength/Weakness
MLCU - Words	11.94	-0.40	12.77	-
Clausal Density	1.84	0.64	1.70	-
Lexical Diversity* (NDW)	117	-1.82	146.34	Weakness
NTW	394	-0.85	729.91	-
TCU	33	-0.83	57.32	-
ESS	28	-1.25	35.29	Weakness
Maze Words as % of Total Words	3.4%	1.17	8.69%	Strength
Words per Minute	168.72	0.80	148.98	-
% Utterances with Errors	3.0%	1.12	12.59%	Strength
Average SD from Database Mean		**-0.1578**		

* (Based on comparison to 30 children; samples matched at 472 total words)

Table 6. Expository Profile for Participant 4. (CA: 16;2; based on comparison to 29 children)

Language Measure	Transcript Value	SD From Database	Database Mean	Relative Strength/Weakness
MLCU - Words	9.06	-1.68	12.69	-
Clausal Density	1.56	-0.45	1.66	-
Lexical Diversity* (NDW)	133	-1.46	149.15	-
NTW	770	0.05	751.83	-
TCU	85	0.63	61.79	Strength
ESS	23	-1.52	33.14	-
Maze Words as % of Total Words	19.5%	-1.53	9.85%	-
Words per Minute	145.79	-0.49	157.81	-
% Utterances with Errors	29.4%	-1.76	14.72%	-
Average SD from Database Mean		**-0.9122**		

* (Based on comparison to 26 children; samples matched at 429 total words)

Table 7. Expository Profile for Participant 5. (CA: 16;8; based on comparison to 26 children)

Language Measure	Transcript Value	SD From Database	Database Mean	Relative Strength/Weakness
MLCU - Words	11.95	-0.26	12.60	-
Clausal Density	1.46	-0.57	1.60	-
Lexical Diversity* (NDW)	145	0.45	139	Strength
NTW	514	-0.70	798.96	-
TCU	43	-0.60	66.23	-
ESS	24	-0.84	29.77	-
Maze Words as % of Total Words	7.6%	0.31	9.57%	-
Words per Minute	104.63	-2.38	161.29	Weakness
% Utterances with Errors	27.9%	-1.07	15.96%	-
Average SD from Database Mean		**-0.6289**		

* (Based on comparison to 23 children; samples matched at 379 total words)

Table 8. Expository Profile for Participant 6. (CA: 17;1; based on comparison to 27 children)

Language Measure	Transcript Value	SD From Database	Database Mean	Relative Strength/Weakness
MLCU - Words	11.95	-0.45	13.08	-
Clausal Density	1.71	0.16	1.66	-
Lexical Diversity* (NDW)	99	-0.25	101.15	-
NTW	227	-1.24	883.70	
TCU	19	-1.35	67.59	-
ESS	23	-1.28	32.37	-
Maze Words as % of Total Words	6.2%	0.70	9.17%	Strength
Words per Minute	120.95	-1.92	165.58	Weakness
% Utterances with Errors	10.5%	0.43	14.8%	-
Average SD from Database Mean		**-0.5778**		

* (Based on comparison to 26 children; samples matched at 227 total words)

Table 9. Expository Profile for Participant 7. (CA: 17;4; based on comparison to 30 children)

Language Measure	Transcript Value	SD From Database	Database Mean	Relative Strength/Weakness
MLCU - Words	14.61	0.75	12.79	-
Clausal Density	1.93	1.12	1.67	Strength
Lexical Diversity* (NDW)	141	-0.24	144.82	-
NTW	453	-0.82	866.27	-
TCU	31	-1.04	67.13	-
ESS	31	-0.15	32.17	-
Maze Words as % of Total Words	12.4%	-0.97	8.35%	-
Words per Minute	132.31	-1.18	163.04	-
% Utterances with Errors	9.7%	0.34	12.15%	-
Average SD from Database Mean		**-0.2433**		

* (Based on comparison to 28 children; samples matched at 379 total words)

Table 10. Expository Profile for Participant 8. (CA: 18;0; based on comparison to 24 children)

Language Index	Transcript Value	SD From Database	Database Mean	Relative Strength/Weakness
MLCU - Words	7.54	-2.13	12.69	-
Clausal Density	1.50	-0.77	1.72	-
Lexical Diversity* (NDW)	89	-1.09	98.96	-
NTW	211	-0.96	851.92	-
TCU	28	-0.78	67.38	-
ESS	28	-0.70	32.96	-
Maze Words as % of Total Words	11.3%	-0.44	8.96%	-
Words per Minute	79.56	-3.15	161.84	Weakness
% Utterances with Errors	17.9%	-0.81	11.13%	-
Average SD from Database Mean		**-1.203**		

* (Based on comparison to 24 children; samples matched at 211 total words)

Table 11. Expository Profile for Participant 9. (CA: 18;6; based on comparison to 18 children)

Language Index	Transcript Value	SD From Database	Database Mean	Relative Strength/Weakness
MLCU - Words	7.98	-1.98	12.61	-
Clausal Density	1.17	-1.52	1.70	-
Lexical Diversity* (NDW)	129	-0.70	138.29	Strength
NTW	367	-0.69	927.94	Strength
TCU	46	-0.46	74	Strength
ESS	3	-4.89	35.17	Weakness
Maze Words as % of Total Words	18.8%	-1.93	9.42%	-
Words per Minute	80.79	-4.49	168.48	Weakness
% Utterances with Errors	32.6%	-2.06	11.84%	-
Average SD from Database Mean		**-2.08**		

* (Based on comparison to 17 children; samples matched at 366 total words)

Heterogeneity of Profiles

Analysis revealed at least one relative strength and/or weakness for all children with LI except Participant 2, whose scores were all within one SD of his own overall composite score. The distinct profiles of relative strengths and weaknesses demonstrated by each of the nine participants' samples are shown in Table 12 below. MLCU in words and clausal density were paired as measures of syntactic complexity. NTW and TCU are both reflected in productivity, or the amount of verbal output generated in the language sample.

Table 12. Distinct linguistic profiles demonstrated by participants.

	Strength(s)	*Weakness(es)*
Profile 1	Syntactic Complexity	Expository Content
Profile 2	*All measures relatively equal*	
Profile 3	Mazes	Lexical Diversity
	Errors & Omissions	Expository Content
Profile 4	Productivity	-
Profile 5	Lexical Diversity	Words per Minute
Profile 6	Mazes	Words per Minute
Profile 7	Syntactic Complexity	-
Profile 8	-	Words per Minute
Profile 9	Lexical Diversity	Expository Content
	Productivity	Words per Minute

While no two participants showed an identical combination of relative strengths and weaknesses, there were some similarities among profiles. Table 13 below illustrates the number of children with LI whose profile included each relative strength or weakness. The most prevalent weaknesses were WPM, shown by four students, and ESS, shown by three. No profiles demonstrated relative weaknesses in syntactic complexity, productivity, mazes, or errors and omissions. WPM and ESS were the only two measures in which no participants had relative strengths.

Table 13. Number of profiles with each relative strength or weakness.

Relative Strength or Weakness	*Number of Samples*
Syntactic Complexity – Strength	2
Weakness	0
Lexical Diversity – Strength	2
Weakness	1
Productivity – Strength	2
Weakness	0
Expository Content – Strength	0
Weakness	3
Mazes – Strength	2
Weakness	0
Words per Minute – Strength	0
Weakness	4
Errors & Omissions – Strength	1
Weakness	0

CHAPTER 4

Discussion

The need for authentic assessment instruments to characterize the language skills of older students with LI motivated the investigation of expository LSA as a descriptive assessment. Comparing language samples from nine high school students with LI to the samples of same-age TD peers in the same context facilitated the development of unique profiles of relative strengths and weaknesses in expository discourse for adolescents with LI.

Performance of Children with LI Compared to TD Peers

While every participant demonstrated significantly low performance when compared to age-matched TD peers in at least two language measures, all participants also scored within one SD of the database mean in at least three measures. Within one participant's language sample, two scores were more than one SD higher than the TD mean, two scores more than one SD lower, and four scores within average range. That all students demonstrated a mixed range of performance across language measures further illustrates the variability in language skill across dimensions within individuals with LI.

Many students with LI performed generally well on the expository task. Although every student demonstrated at least two weakness skill areas when compared to TD children, seven of the nine overall composite scores landed within one SD of the database mean. The majority of participants with LI scored within one SD of the database mean or higher in measures of syntactic complexity (MLCU=6; CD=6), lexical diversity (6), and productivity (NTW=8; TCU=7).

Four of the nine students with LI performed within normal limits on the ESS measure when compared to their age-matched peers. There are several potential reasons for this.

One possibility is that the four children who scored within normal limits on the ESS measure have a relative strength in expository discourse. These children may have underlying language difficulties, but have developed effective compensatory strategies for communicating. For instance, Participant 5 scored more than one SD below the mean in both the WPM and errors and omissions measures, but scored within one SD of the database mean in all measures of productivity, syntactic complexity, lexical diversity, and ESS. While Participant 5's language sample included more errors and was less verbally fluent than samples of same-age TD children, he was still able to communicate his exposition clearly and thoroughly enough to have been rated within normal limits on the ESS rubric.

In addition to compensatory strategies possibly developed by students, the provision of planning time and materials prior to the oral exposition may have facilitated more thorough and detailed explanations from children with LI as well as the TD children whose samples comprised the database. Previous studies that have documented the sensitivity of expository LSA to differences in students with LI and their TD peers have not included planning time and materials as part of the elicitation protocol (Nippold et al., 2008; Scott & Windsor, 2000). Heilmann and Malone (2014) documented significant increases in sample length (NTW; TCU) and utterance complexity (MLCU; CD) in TD children who received planning time and materials when compared to previous studies examining the FGS protocol that did not incorporate planning, and attributed this difference to the extra scaffolding provided by the planning sheet. The authors posited that the use of a planning sheet to organize and support oral explanations

influenced students to include more detail in their productions, and reduced the processing capacity required to organize their productions, allowing students to devote more cognitive resources to producing longer and more complex expositions. It is possible that a similar effect occurred in the present study, with the planning sheet facilitating more thorough and detailed samples from some children with LI, resulting in higher scores than would be achieved without support.

Another potential explanation is that this expository task may not effectively distinguish between high school students with LI and those that are TD. This may be the case if the extra support and scaffolding provided has the potential to increase the performance of some children with LI into the average range for their age group. Furthermore, although previous studies examining performance among children with LI and TD peers in expository language tasks have shown significant differences between groups in measures of syntactic complexity, productivity, and extent of grammatical error, none have investigated group differences in discourse-level measures such as ESS (Nippold et al., 2008; Scott & Windsor, 2000). Further research should continue to explore the ability of children with LI to convey text-level concepts and the sensitivity of this measure in distinguishing between children with LI and TD language.

Because the adolescents who provided samples for this study voluntarily elected to participate, self-selection bias may have affected the results. Students who volunteered to participate may have stronger oral language skills or feel more confident completing oral language tasks than those who abstained from the study. Thus, self-selection may have resulted in a group of participants who tend to demonstrate higher performance on expository language tasks than do the greater population of adolescents with LI.

It is also possible that these children did not have language impairments. This is unlikely, because all participants were required to have IEPs with LI identified by having scored at least 1.75 SD below age expectations on a norm-referenced language assessment to be eligible for this study. However, we did not have current norm-referenced scores for every participant. To control for this, future studies should include additional norm-referenced testing as part of the selection criteria.

Heterogeneity of Profiles

Researchers have documented the multidimensionality of language impairment in previous studies, and demonstrated that general oral language performance measures on norm-referenced assessments revealed multiple distinct patterns of language ability across individuals with LI. The results of the current study support the hypothesis that language measures taken from descriptive assessments such as LSA also reveal individual profiles. In this sample of nine high school students with LI, the phenotype of LI was heterogeneous, with no two participants demonstrating the same combination of strengths and weaknesses.

Four of nine profiles showed a relative weakness in the WPM measure (Profiles 5, 6, 8, and 9; see Table 12), although none had relative weaknesses in the other measure of verbal fluency, mazes. In fact, Participant 6 demonstrated a relative strength in the mazes measure. This pattern is similar to the profiles of disordered oral language summarized by Miller, Andriacchi, and Nockerts (2016). Miller's research recognized five distinct profiles of disordered performance in oral language samples, two of which related specifically to speaking rate. The slow speaking rate profile was defined by a low WPM score and a high number of

pauses; the fast speaking rate with low semantic content profile was defined by a high WPM score with circumlocution (Miller et al., 2016). The four profiles in the present study with significantly low WPM aligned with Miller's slow speaking rate profile, tending to use silent rather than filled pauses.

None of the students with LI showed a relative strength in ESS. This pattern makes sense when one considers that higher scores on the ESS measure are linked with providing thorough descriptions and greater detail (related to productivity and syntactic complexity), use of sophisticated and appropriate terminology (related to lexical diversity), and cohesion (which can be affected by verbal fluency and errors and omissions). A student who is very strong in effectively communicating a thorough explanation is likely to be equally as strong in other measures of verbal performance. Likewise, a student who struggles with one or more aspect of oral language ability is likely to score less well on one or more of the ten parts of the ESS rubric. Interestingly, the three profiles with relative weaknesses in ESS all had different relative strengths, indicating that several features of linguistic performance play a role in determining how well a speaker conveys a message in a given discourse style.

Only one participant had a relatively equivalent level of performance in all language skill areas; all other participants demonstrated at least one relative strength or weakness. This student, Participant 2, scored within the average range in all language measures except two, in which he scored only slightly more than one SD below the mean for TD children: clausal density (-1.13) and errors and omissions (-1.01; see Table 4). Potential reasons for some students' performance in the average range of TD language were discussed in the previous section.

Clinical Implications

SLPs working with junior high and high school students have a large selection of validated, norm-referenced assessment tools that are effective at diagnosing a disorder, but require a greater number of valid and sensitive descriptive assessments to characterize a student's relative strengths and weaknesses and assist with planning individualized treatments related to the curriculum. Clinicians are constantly faced with the task of documenting how their speech and language intervention supports students' academic achievement. The expository task described in this study is an authentic measure that both relates to academic standards and is effective in describing the nature of LI in adolescents.

Several attributes of the elicitation protocol used in this study make it both effective and practical for use by school-based SLPs. The FGS protocol is closely aligned with academic expectations for older students, and can be used to document performance on grade-level requirements in the Common Core State Standards (National Governor's Association, 2010). The task can be administered fairly quickly, and the clearly outlined procedure can be followed consistently and reliably across clinicians. Furthermore, the increased complexity of the task and the opportunity to select a topic of interest has the potential to engage students in high-level expository discourse. With the development of a large database of samples of TD children using the FGS protocol, SLPs now have the opportunity to examine a student's performance in a functional expository task as it compares to age expectations. The findings of the current study suggest that these comparisons can be used to identify areas of strength and deficits in various language skills.

If planning time and organization materials do indeed facilitate the production of more detailed, thorough and complex expository language samples by children with LI, clinicians can help students with LI implement these compensatory strategies to promote higher level performance in general curriculum tasks. General education teachers already frequently provide work time and prompt students to use graphic organizers in preparation for written and oral assignments. As demonstrated by the increase in performance when kids with TD language were allowed to use planning time and materials in Heilmann and Malone (2014), this practice holds substantial potential benefit for TD students and those with LI alike. For many children with LI in schools, the provision of this type of general support for all students can lead to more meaningful inclusion and participation in the general curriculum.

Limitations and Future Directions

The foremost limitation of this study is its small sample size. Future research should aim to examine the expository LSA of adolescents with LI on a larger scale, to investigate whether subgroups of language profiles emerge in a larger sample. A second limitation is a lack of norm-referenced testing as a component of the selection criteria for participants. While we had recent assessment scores for some students with LI, we did not obtain them for all participants, and used the diagnosis on a student's IEP as the only criterion to identify LI. Researchers conducting future studies in this topic should consider using validated instruments to strengthen the identification of LI when selecting participants. For instance, the sentence repetition subtest of the Clinical Evaluation of Language Fundamentals – Fifth Edition (CELF-5; Wiig, Semel & Secord, 2013) is quick to administer and has strong diagnostic accuracy for

distinguishing children with LI and TD language. Poll, Betz, and Miller (2010) investigated the efficacy of three tasks in classifying two groups of young adults, 13 with LI and 18 with TD language, and reported that a sentence repetition task, with an overall classification accuracy of 87%, was a more effective diagnostic marker than the other tasks studied, non-word repetition and judgments of sentence grammaticality. Using the CELF-5 sentence repetition subtest in data collection to include only children who demonstrate significantly low performance (a standard score of 7 or lower) can help verify the presence of LI in participants in future studies.

The preliminary data described in this study suggest that using a database of typical speakers facilitates the development of linguistic profiles that may assist with clinical decision making when describing the expository language skills of older students with LI. To continue this line of research, a greater number of expository language samples from adolescents with LI need to be collected using the FGS protocol and analyzed in comparison to the database of TD children. A larger sample of children with LI may help determine specifically which expository LSA measures are most sensitive for distinguishing between adolescents with LI and TD language skills, and what levels of performance relative to the expository database constitute clinical significance. Additionally, the number and profiles of unique subgroups of language ability, as well as the stability of group membership over time, beg for further analysis. Exploration of the effect of discourse type may reveal whether individual linguistic profiles remain the same across contexts or if different strengths and deficits appear depending on speaking task.

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APPENDIX A

Expository Planning Sheet

Component	What's Covered	Notes
Object	What you have to do to win	
Preparations	Playing area and setup Equipment and materials What players do to get ready	
Start	How the contest begins, including who goes first	
Course of play	What happens during a team or player's turn, including any special plays, positions, or roles, both offensive and defensive	
Rules	Major rules, including penalties or violations	
Scoring	Different ways to score, including point values	
Duration	How long the contest lasts, including how it ends and tie-breaking procedures	
Strategies	What smart players do to win, both offensively and defensively	

APPENDIX B

Examiner Script for Eliciting Expository Samples

I'm interested in finding out how well you do at giving explanations. I'm going to make a recording so I can remember what you say. If you want, you can listen to the recording when we're finished.

I want you to imagine that I am a student about your age. I'm visiting the United States from another country and I want to learn as much as I can about life in the U.S. You can help me by explaining how to play your favorite sport or game. You have lots of choices. For example, you could pick a sport, such as basketball or tennis. You could pick a board game, such as Monopoly or chess. Or you could pick a card game, such as poker or rummy. What sport or game do you want to pick?

The student offers an appropriate choice. If a choice is not offered or is inappropriate (such as a video game), reread the examples given above and/or add more examples to aid the student in making an appropriate choice. If the student is still having difficulty making a selection, suggest picking a game or sport recently played in the student's physical education class.

Assume that in my country we don't play [name of sport or game]. I'd like you to explain everything I would need to know to so I could learn to play. I'll expect you to talk for at least five minutes. To help you organize your thoughts, here's a list of topics I'd like you to talk about [hand the student a copy of the planning sheet]. Please take the next few minutes to plan your explanation by taking notes in the blank spaces [indicate empty column on the right]. But don't waste time writing sentences. Just write some key words to remind you of what you want to say. You can talk about the topics in the order they are listed, or else you can number the topics any way you wish. If you don't want to take notes, you can use the backside of the list to draw a diagram or make a graphic organizer. Do you have any questions?

If student expresses difficulty with reading any portion of the checklist, read the unclear portions aloud. If the student has difficulty with understand the vocabulary, give an example from a sport or game different from the one the student has chosen.

Go ahead and start planning.

Allow enough time for student to write something for each topic on the checklist or to complete a diagram or graphic organizer. If the student stops writing or drawing before planning is finished, prompt with, "Please do some planning for [topic name(s)]."

I'm ready to turn on the recorder. You will be doing all the talking. I'm going to listen to what you have to say. Take as much time as you need to give a complete explanation. Remember, I expect you to talk for at least five minutes.

Turn on recording device and have the student begin speaking. After the student has finished speaking from his or her planning sheet, turn off recording device. If the student finishes speaking before five minutes has elapsed, prompt with, "Is there anything else you can tell me?" Review the recording for quality before releasing the student.

APPENDIX C

Expository Scoring Scheme Rubric

Characteristic	Proficient	Emerging	Minimal/Immature
Object	Full description of the main objective	Mention of the main objective	Mention of winner but no or limited description how that is determined **OR** Description of another aspect of the contest, such as strategy or scoring
Preparations	**1) Playing area** Labels place and provides details about shape and layout **AND/OR** **2) Equipment** Labels items and provides detailed description, including function **AND/OR** **3) Player preparations** Provides detailed description	**1) Playing area** Labels place and provides limited details about shape and layout **OR** **2) Equipment** Labels items with limited description **OR** **3) Player preparations** Provides some description	**1) Playing area** Labels place but provides no details about shape and layout **OR** **2) Equipment** Labels items with no description **OR** **3) Player preparations** Provides limited description
Start	Describes initial situation and how play begins	Describes initial situation or how play begins, but not both	Limited description of the initial situation or how play begins
Course of play	Detailed description of: A unit of play **AND/OR** Major rules **AND/OR** Major plays	Some description of: A unit of play **OR** Major rules **OR** Major plays	Limited description of: A unit of play **OR** Major rules **OR** Major plays

Rules	Clear statement of major rules and, when applicable, consequences for violations	Mentions major rules and, when applicable, consequences for violations but without full detail	Minimal or no mention of major rules or consequences for violations
Scoring	Full description of ways to score and point values	Incomplete description of ways to score and point values	Limited description of ways to score or point values
Duration	Clear description of: How long the contest lasts, including, when applicable, the units in which duration is measured **AND/OR** How the contest ends **AND/OR** Tie breaking procedures	Some description of: How long the contest lasts **OR** How the contest ends **OR** Tie breaking procedures	Limited description of: How long the contest lasts **OR** How the contest ends **OR** Tie breaking procedures
Strategy	Full description of some ways to win the contest that are not required by the rules but are what competent players do	Mention of some ways to win the contest that are not required by the rules but are what competent players do	Vague or incomplete mention of some ways to win the contest that are not required by the rules but are what competent players do
Terminology	Terms of art are clearly defined whenever introduced	Some terms of art defined, but not consistently or clearly	Terms of art introduced but not further defined
Cohesion	Topics follow a logical order **AND** Topics are completely covered before moving on to another **AND** Smooth transitions between topics	Topics follow a logical order **OR** Topics are completely covered before moving on to another **OR** Smooth transitions between topics	Little discernable order to topics; Much jumping between topics; **AND** Abrupt transitions between topics

Scoring: Each characteristic receives a scaled score 0–5. Proficient characteristics=5, Emerging=3, Minimal/Immature=1. Scores in between (e.g., 2, 4) are undefined, use judgment. Significant factual errors reduce the score for that topic. Scores of 0, NA are defined below. A composite is scored by adding the total of the characteristic scores. Highest score=50.

A score of 0 is given for student errors (e.g., not covering topic, explaining a different game or sport, not completing/refusing task, student unintelligibility, abandoned utterances).

A score of NA (not applicable) is given for mechanical/examiner/operator errors (e.g., interference from background noise, issues with recording (cut-offs, interruptions), examiner quitting before student does, examiner not following protocol, examiner asking overly specific or leading questions rather than open-ended questions or prompts).

APPENDIX D

Examiner Checklist

Participant ID: _____ Clinician Name: _____

****

Checklist for Data Collection

____ Ensure that informed consent signed by parent *and* student

____ Collect background information (enter information below)

____ Complete CELF-5 Sentence Repetition Task

____ Complete Expository Language Sample

For any questions, contact John Helimann at heilmanj@uwm.edu or 414-861-6665*

BACKGROUND INFORMATION

Date of Birth: _____ Date of Testing: _____

Gender: Male Female ELL Services? Yes No

Free/Reduced Lunch? Yes No Race/Ethnicity: _____

GPA (if available): _____

[Continued on Next Page]

Speech/language Record Review:

1. What diagnoses are listed on the IEP? _____

_____

2. Does the student have IEP goals related to oral language skills? Yes No

3. What other school professionals are part of the IEP (e.g., OT, Special Education): _____

_____

4. Speech/language test results available from the past 5 years?

Test Name: _____ Date Administered: _____

Results (Standard Scores and/or description of performance): _____

_____

Test Name: _____ Date Administered:_____

Results (Standard Scores and/or description of performance): _____

_____

Test Name: _____ Date Administered: _____

Results (Standard Scores and/or description of performance): _____

_____