

UCLA

UCLA Electronic Theses and Dissertations

Title

Exploring Vocabulary Knowledge and Home Language Experiences on Aspects of Young Children's Oral Explanatory Discourse Skills

Permalink

<https://escholarship.org/uc/item/1cz053mm>

Author

Pogossian, Anahit

Publication Date

2021

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA

Los Angeles

Exploring Vocabulary Knowledge and Home Language Experiences
on Aspects of Young Children's Oral Explanatory Discourse Skills

A thesis submitted in partial satisfaction
of the requirements for the degree Master of Arts
in Education

by

Anahit Pogossian

2021

© Copyright by

Anahit Pogossian

2021

ABSTRACT OF THE THESIS

Exploring Vocabulary Knowledge and Home Language Experiences
on Aspects of Young Children's Oral Explanatory Discourse Skills

by

Anahit Pogossian

Master of Arts in Education

University of California, Los Angeles, 2021

Professor Alison L. Bailey, Chair

The ability for a child to explain what he or she is thinking is crucial for their language development. This study focused on children in pre-kindergarten and kindergarten at a university-affiliated elementary school in Southern California and the relationship between their explanatory discourse abilities and their scores on topic vocabulary and picture identification tasks. This study also explored how home discourse practices influence children's explanatory discourse abilities. The aims of this study were to evaluate the relationship between vocabulary knowledge and their performance on one oral explanation task around the topic of teeth cleaning. The quality of a child's oral explanation skills is scored on three features: the sophistication of their topic vocabulary, the sophistication of their sentence structure, and the coherence and cohesion of their discourse. Findings suggest that uncommon words knowledge and general

vocabulary knowledge positively influence children's sentence structure skills. We also find that the more frequently parents talk with their children about things they have done together positively influences children's vocabulary and cohesion/coherence skills. This study adds to previous literature on oral language development by examining a unique genre of oral language, explanatory discourse.

The thesis of Anahit Pogossian is approved.

Carola Suárez-Orozco

Catherine Sandhofer

Alison L. Bailey, Committee Chair

University of California, Los Angeles

2021

Table of Contents

Introduction	1
Background.....	3
Current Study.....	10
Method.....	12
Analytic Plan	22
Results	23
Discussion.....	33
Conclusion.....	36
References	38

List of Tables

Table 1. Cohort, gender and grade breakdown.....	12
Table 2. Participant home language.....	13
Table 3. Demographic breakdown.....	13
Table 4. Descriptive statistics for the six vocabulary measures	23
Table 5. Correlations between vocab measures and background variables.....	25
Table 6. Correlations between vocab measures, home language and classroom variables	25
Table 7. Multiple linear regression models predicting students' DLLP explanation task sentence structure from abstractness, uncommonness. GFTA-3 SIW, controlling for grade, class type, cohort and gender.....	27
Table 8. Multiple linear regression models predicting students' DLLP explanation task cohesion/coherence from abstractness, uncommonness, and GFTA-3 SIW, controlling for grade, class type, cohort, and gender	28
Table 9. Multiple regression models predicting students' DLLP explanation task topic vocabulary from parent behaviors controlling for grade and class type.....	30
Table 10. Multiple regression models predicting students' DLLP explanation task sentence structure from parent behaviors controlling for grade and class type.....	31
Table 11. Multiple regression models predicting students' DLLP explanation task cohesion/coherence from parent behaviors controlling for grade and class type	32

Acknowledgements

I would like to thank the students and graduate researchers who participated in data collection for this larger project (the Development, Deployment and Evaluation of Personalized Learning Companion for Early Literacy and Language Learning project). Thank you to co-PIs Alison Bailey and Abeer Alwan for allowing me access to the project's data. I also thank Marlen Quintero Perez and Alejandra Martin for their assistance with reliability coding of the pragmatic measures used in the current study. Thank you to Alison Bailey, Carola Suárez-Orozco, and Catherine Sandhofer for their thoughtful feedback and support throughout this study. The larger project is funded by a National Science Foundation (NSF) Grant. The views expressed in this paper are not those of NSF. All errors remain my own.

Introduction

Proficiency in oral language provides children with a vital tool for thought. Oral language has been shown to be predictive of an array of developmental skills and outcomes, some of which include reading comprehension (Lonigan, Schatschneider, & Westberg, 2008), discourse abilities (Snow, 1991), psychosocial development, and socioemotional development (Lindquist, MacCormack, & Shablack, 2015). Oral language can be defined as the skills and knowledge which we use to communicate thoughts, as well as the ability to listen to and comprehend what is being said, which are strongly related to our reading comprehension and writing abilities (Lee, 2011). Without fluent and well-structured oral language, children will find it very difficult to think (Bruner, 1983). This study will focus on a specific genre of oral language; explanatory discourse skills, which includes the ability to articulate complex sentences with a clear schema as well as the capacity to elaborate upon them (Bailey & Heritage, 2014).

Literacy is often used as a proxy for predictions of cognitive and discourse development. However, oral language abilities develop at a much younger age, before the young child can read (i.e. oral language develops preliteracy). During the first five years of life, children's language develops through three stages (Cohen, 2010). The first stage is when infants communicate through cries, gazes, and early gestures. The second stage is from 6 months to 18 months, and communication here is intentional with adults. The last stage however, ranging from 18 months onward is when language overtakes actions as children's primary form of communication with others. This study will focus on the last stage, which ranges from 18 months onward. During this stage, language overtakes actions as children's primary form of communication with others. Rowe (2012) highlights the importance of language rich incorporation during the early years of a child's life. For example, children who have more language experience (i.e., vocabulary size)

process sentences in a more adultlike way (Anderson et al., 2011, cited in Hoff, 2013). Children who are poor communicators at the third stage will have difficulty understanding language and responding appropriately, which may in turn lead to difficulties in reading later in life (Dickinson et al., 2010). However, as children enter the school system, the demands of their discourse abilities change. Children's ability to explain tasks in an academic and social setting develop over the elementary grades (Beals, 1993; Bailey, 2017) as they receive formal instruction which is tasked with the goal of further developing children's oral language development, since not all children have fully acquired their first language as they enter school (Hoff, 2013).

To further elaborate on language and literacy development, language practices in the home is a crucial factor in predicting language aptitude and proficiency (Lao, 2014). What happens in the home is essential in setting the language learning processes of children. Research shows the relationship between home language use and literacy development are highly correlated (Howard et al., 2014).

This study was designed to examine language practices of children in pre-kindergarten and kindergarten at an elementary school in Southern California and the relationship between their scores on topic vocabulary and a picture identification task and their explanatory discourse abilities. A second aim of this study was to evaluate the relationship between their explanatory discourse skills and their home discourse practices that likely to also support discourse development. Therefore, this study examined the intersection of vocabulary knowledge, home discourse practices and children's overall linguistic performance on an oral explanation task to determine how these factors influence the development of children's explanatory discourse skills.

Background

The current study was guided by two frameworks; a critical mass hypothesis, in which the authors argue that the morphosyntax of children develops only if they have acquired a certain number of different words (Marchman & Bates, 1994), and a sociocultural theoretical framework, in which language development is conceived as a social activity influenced by many cultural factors (Vygotsky, 1978).

Morphosyntax can ultimately be broken down into two linguistic concepts; morphology and syntax. Morphology is the study of word forms and the rules of their formation. Syntax is the study of the structure of sentences and their rules of formation. This framework guides studies in the realm of morphosyntax and grammar development. Therefore, it is argued that there is a strong, positive relationship between the lexical development of children and their morphosyntax development. The critical mass hypothesis is important in this study for evaluating children's level of grammatical development, as it posits that as the number of words a child knows increases, so does the child's grammatical abilities, i.e., morphosyntax (Marchman & Bates, 1994). Hence, the higher children score on aspects of vocabulary, the better they will perform on the sentence structure and cohesion/coherence aspects of their oral explanation task.

Sociolinguistic competence is a child's understanding of the rules of interaction and social meanings. Sociocultural theory takes into consideration the home language practices of these children and how that affects their oral language development. Because language learning is a sociocultural phenomenon in which student interactions are the central process to learning (Jong, 2002), it is important to examine how parents are interacting with their children through language in the home. Combined, both frameworks guide the current study by observing

children's vocabulary and morphosyntactic development, as well as their social interactions with language.

Vocabulary Size

Vocabulary provides the foundation for a plethora of linguistic abilities, which include grammatical knowledge, definitional vocabulary, and listening comprehension (Lonigan, Schatschneider, & Westberg, 2008). To further this aspect of language development, it has been shown that the vocabulary size of children at ages 2;0 (two years; zero months) and 2;6 is strongly related to their grammatical development (McGregor, Sheng, & Smith, 2005). The more vocabulary words a child can draw from, the less trouble they will have finding words to convey their thoughts (Mezynski, 1983). The selection of a word depends on activation of a lexical concept (Levelt, Roelofs, & Meyer, 1999), and the larger their lexicon, the larger their lexical concept. The more words a child understands, the more concepts they know and can label. The more contextual clues there are for a child, and the more vocabulary words in a child's lexicon, the easier it will be for them to retrieve words.

Vocabulary size is also important for later content knowledge acquisition; it is a predictor of reading and overall comprehension (Yovanoff et al., 2005). A child needs to know enough words to understand what is written on a page; merely being able to decode the words and letters is not enough. Total vocabulary size at age 2 can predict later language and literacy achievement up to 5th grade (Lee, 2011) because it contributes to phonemic awareness and phonological awareness, which is correlated with alphabet knowledge (Sénéchal & LeFevre, 2002).

Vocabulary size in children who come from bilingual families is different from those who come from monolingual families, and it needs to be better understood because of

vocabulary size differences. Bilingual children know more total words combined across their two languages than monolingual children at the same age (Hovsepian, 2017). Language assessments and evaluations in bilingual children often yield results that fail to take account of the fact that language knowledge is distributed among two languages. Bilingual children score lower than their monolingual peers when assessed in each language separately (Bedore & Pena, 2008) because of the lack of well-developed, normed, and referenced assessments. Although the development of grammar is much less understood than for vocabulary, we do know that coming from a bilingual family does not necessarily mean that a child will speak the home language (De Houwer, 2007). Morphosyntactic and grammatical development in children from bilingual families depends on the amount of exposure and same-language experience in each of the child's languages (Thordardottir, 2015). For example, the amount of exposure a child gets in each language affects the development of that language. If a child is receiving input in English 80% of the time at home, and only 20% in another language, this child's English language will develop more rapidly.

Research has shown that preschool children's vocabulary was correlated with reading comprehension in upper elementary school (Tabor, 2001), and kindergarten children's vocabulary size was an effective predictor of reading comprehension in middle elementary school years (Scarborough, 1998). During these young and early years, there is already a dramatic influence of vocabulary knowledge on later language development. Vocabulary is the start to more complex and important acquisition of additional language features that ultimately determine a student's academic achievement (Schick & Melzi, 2010).

However, it is not only vocabulary size that matters, but also depth. This is where a child's competence in sociolinguistics is important because many word knowledge aspects are

related to contextualized use (Schmitt, 2014). Vocabulary size is measured in many ways and the type of measurement may affect the relationship between size and depth (Schmitt, 2014).

Therefore, the importance of administering the correct assessment is crucial in capturing the true vocabulary knowledge of a child.

There are many ways in which vocabulary can develop, some of which include intellectually stimulating conversations, dialogic reading in school, and book reading in the home. This depends on the language, location, frequency, and quality of exposure. For this reason, this study also incorporates a parent survey on home language practices on a subset of the sample. The survey examines frequency of parent-to-child talk in the home to provide insight on oral language development in the home.

Explanatory Discourse Skills

Explanatory discourse is the ability for children to articulate clear, complex sentences, as well as the ability to elaborate on them (Bailey & Heritage, 2014). A key area of oral language discourse is the ability to explain what one is thinking. Explanatory discourse is a genre of oral language development that is important for cognitive, literacy, and discourse development (Bailey, 2018; Snow, 1991), as it is necessary to be able to communicate through many competencies. For example, it is important for children to express when they are hungry, cold, and tired. For a child to be unable to explain what is on her/his mind is also detrimental to her/his social and emotional development (Lindquist, MacCormack, & Shablack, 2015). Her/his language development influences her/his social interaction skills, self-confidence, and self-image. For students to possess strong oral language skills, they need to have strong vocabulary knowledge; i.e., the ability to understand words and to effectively use them to communicate. This includes vocabulary comprehension and the ability to identify and interpret discourse in oral

communication situations and settings. The ability for a student to be able to articulate that he or she does not understand something, like a vocabulary word, requires explanatory skills. First, the child must realize that she does not understand something. Then, she must effectively be able to communicate what she needs to understand. Finally, she then must interpret the information provided to them from a parent, teacher or elder and apply their new knowledge to fill the gaps in their previous knowledge.

Oral abilities, such as speaking and listening, can be defined as expressing or exchanging thoughts using language. It is the systemic combination of putting together verbal utterances to convey meaning (Nunan, 2003). Speaking can further be broken down into two categories; accuracy, the conventional use of vocabulary, grammar and pronunciation, and fluency, the ability to maintain the conversation (Harmer, 2001). Harmer (2001) breaks down speech into further elements of connected speech, discourse practices, lexis and grammar, and negotiation and grammar. These are then broken down further into how well the child can pronounce phonemes, the mean length of utterances during expression, the lexical functions and certain language functions used, and the structure of the child's discourse. Lexis and grammatical competence include the phonology, vocabulary, word formation and sentence formation. Grammar development is the way children learn to use morphology and syntax in conventional (adult-like) ways. This applies to both oral and written language. The quality of a child's oral explanation skills in this study was scored in three categories; the sophistication of their topic vocabulary, the sophistication of their sentence structure, and the coherence and cohesion of their sentences. Topic vocabulary focused on the child's word choices and their relation to the topic, sentence structure focused on the complexity of their sentences, and cohesion/coherence focused

on how sentences are linked together and how clear the explanation was (Bailey & Heritage, 2014).

The children's explanatory discourse was elicited through one personal explanatory task in which students were asked to explain how they brush their teeth (Bailey, 2017). Further elaboration on this task is provided in the methods section.

Home Discourse Practices

Parental language input is crucial for language development, especially for the first five years of life, before the child has begun formal schooling. Home literacy practices, children's interest in book reading, frequency of reading, and rate of mother's metalingual utterances also predict expressive language development (Deckner, Adamson, & Bakeman, 2006). Parental language choice patterns are related to children's home language use as well (De Houwer, 2007). However, for children who do speak two languages, parental language mixing, parental use of specific grammatical constructions, and specific activities such as book reading matter for language development (De Houwer, 1997; Paradis & Navarro, 2003; Mishina, 1999; Nicoladis & Genesee, 1997) because there is no guarantee that the child who comes from a family where a language other than the dominant language is spoken in the home will be able to speak in the home language (De Houwer, 2007). Parental complex speech patterns yield greater language production and comprehension in children's language development, which shows that quality of parent input affects child language development. This study includes children from diverse backgrounds and different home languages; therefore, these variables were also taken into consideration.

The amount of talk and the quality of conversations at home can influence how much and how far a child's language develops. Past work on children's narrative abilities has been

grounded in Vygotsky's (1978) work and states that these skills are formed through social and cognitive experiences that are supported by the mother's verbal scaffolds (Bailey, 2018). Not only is the mother's scaffolding important for language development, but it has shown to be crucial for memory retention and the ability for children to recall information. For example, when mothers use elaborative and why-questions to reminisce past events, this increases children's coherence of the event (Fivush et al., 2006), and it effectively boosts the child's memory and their narrative skills (Bergen, 2009). Not only is this important for children's communicative competence, but it is also crucial for social interactions with peers; for example, a student needs to be able to communicate their thoughts to their classmates on the playground.

Literacy

Although literacy was not measured in this study, nor was it an aim of this study, it is important to mention since oral language and literacy are so intertwined. Chaney (1994) found that family literacy was related to oral language skills. Further, oral language skills are related to metalinguistic variables, such that both these skills are linked with print awareness. Additionally, there are positive associations between preschool literacy experiences (i.e., exposure to books) and later language and literacy development (Bus, Van, Ijzendoorn, & Pellegrini, 1995; Scarborough & Dobrich, 1994). Therefore, literacy is often used as a proxy for academic achievement and later language development.

No study, to my knowledge, looks at both the child's vocabulary knowledge and the child's home discourse practices from diverse backgrounds in one study. Further, all studies look at oral language skills as a predictor for early literacy either cross-sectionally or longitudinally, to examine how oral language skills develops over time. Most studies have also looked at oral language as being a predictor of phonological awareness and the relation between parental talk

and its relation to children's reminiscence and memory. Although this may be a bidirectional process, no study has looked at other factors predicting oral language abilities. Furthermore, this study examines a specific genre of oral discourse; children's ability to produce explanatory discourse. What is unique about this study was its roll in examining general vocabulary knowledge and topic vocabulary in children and how that relates to their explanatory discourse abilities.

To this day, the research on frequency of abstract and uncommon words used on oral language skills are understudied and unknown. We know the effects of abstract and uncommon word usage on reading and word acquisition, but not on oral explanation/ discourse abilities. Specifically, there have been no studies to examine all these key aspects of vocabulary learning and children's abilities to string them together in cohesive and coherent sentences to explain a task.

Current Study

The purpose of this quantitative, correlational, and exploratory study was to examine the relationship between vocabulary knowledge and home discourse practices and their effect on aspects of children's explanatory discourse skills. This study focused on young children enrolled in pre-kindergarten and kindergarten. The children's vocabulary knowledge was measured using the Goldman-Fristoe Test of Articulation (GTFA-3) and explanatory oral discourse tasks. Sentence structure and cohesion and cohesion at the discourse level, are defined as the grammatical usage and organization, respectively, of language children display during the explanatory task. This study also examined the relationship between the home discourse practices of these children and their performance on the explanatory task. The expressive home environment was assessed through a parent survey. This study utilized a secondary analysis of an

existing dataset that is part of a larger, longitudinal National Science Foundation (NSF) grant (Bailey et al., 2020). The purpose of this study was to closely examine the language development of these children and will inform families and educators about this specific genre of oral discourse, explanatory skills.

Research Questions

The research questions are as follows:

1. How is expressive oral vocabulary related to children's sentence structure and cohesion/coherence in their oral explanations?
2. How is the home discourse environment, as determined through parent reports, related to children's vocabulary, sentence structure, and cohesion/coherence in their oral explanations?
 - a. How does the reported frequency of parental talk with their child about things they have done together affect the child's vocabulary, sentence structure and cohesion/coherence score?
 - b. How does the reported frequency of parental talk with their child about the child's reading in school affect the child's vocabulary, sentence structure, and cohesion/coherence score?

Hypothesis

1. Children who perform better on the expressive vocabulary identification task will also perform better on sentence structure and coherence/cohesion aspects of the oral explanation task.
2. The more discourse rich environment that children have at home with their parents, the better they will perform on aspects of the oral explanation task.

The results from this study provided insight into children’s explanatory discourse abilities, which are a crucial component of language and, relatedly, literacy skills. This study also looked at reported parent behaviors in the home, such as frequency of talking to their child to determine if parent behavior and the resulting expressive home discourse environment is also a predictor of children’s oral explanation skills.

Method

Participants

The sample size for my study was 70 participants, ranging from Pre-Kindergarten to Kindergarten grade levels. Table 1 below shows a breakdown of the sample based on gender, cohort, and grade. Participant selection was based on child’s grade and timing of assessment. To select the participants from my study, I considered the students who had participated in the Fall 2018 and Winter 2019 of the academic school year. This would ensure that this was the participants first wave of data collection and dismiss any confounding variables around testing effects. I also only included children who, at the time, were enrolled in pre-kindergarten and kindergarten, as this age range is the motivator behind this study.

Table 1

Cohort, Gender and Grade Breakdown

Cohort	Fall 2018 (N=30)		Winter 2019 (N=40)	
	n	%	n	%
Gender				
Female	13	43	24	60
Male	17	57	16	40
Grade				
Pre-Kinder	13	43	15	38
Kindergarten	17	57	25	62

The parent data for a subset these children is available for 28 participants. Table 2 shows a breakdown of the home languages spoken by those who had filled out the take-home survey either online or on paper.

Table 2

Participant Home Language

Language	Percentage
English Only	52.3
Spanish Only	12.5
Other ¹	9.1
Multiple	26.1
Total	100

Data Source

The data for this study were collected by a larger longitudinal study for the implementation of a personalized companion robot to assist with kindergarten age children’s learning of language and early literacy (NSF Grant #1734380). The sample that I analyzed was a convenience sample from a subset of this data. The data were collected at a university affiliated school in Southern California, in four classrooms across the school campus (Bailey et al., 2020). Please see Table 3 below for a demographic breakdown of participants.

Table 3

Demographic Breakdown

Ethnicity	Percentage
White	26.1
African American	6.2
Latino	18.3
Asian	6.6
Multirace	39.8
Other	2.9
Total	100

¹ Other languages comprised of German, Bulgarian, Chinese, Portuguese, Turkish, Arabic, Hindi, Farsi, French, and Urdu

Procedures

This study collected data through child assessment and through parent survey. I included both these data types into my analysis. In this paper, the oral discourse skills we will be examining will be in the genre of explanatory skills. Specifically, this paper focused on explanations in relation to their use of vocabulary, their grammar (sentence structure), and the ability to maintain a logical and consistent response (cohesion/coherence). Each of these constructs were scored on a scale of zero-three; zero meaning not evident, one meaning emergent, two meaning developing, and three meaning controlled (Bailey & Heritage, 2014). The aims were to evaluate the relationship between vocabulary knowledge in preschool and kindergarten aged children and their scores on two oral explanation tasks and to determine how home discourse practices influence children's language development. The quality of a child's oral explanation skills was scored on three categories: the sophistication of their topic vocabulary, the sophistication of their sentence structure, and the coherence and cohesion of their sentences.

Child Assessment. The assessment was administered in two cohorts, the Fall of 2018 through Winter 2019 in a quiet room. This data were collected at a school in Southern California, all parents and students participating had provided assent and consent and met all IRB requirements. All pre-kindergarten and kindergarten grade students who completed the study for the first time between the months of September 2018-March 2019 of the academic year were included in this study. The children were also in two different class types, an English Medium Instruction (EMI) classroom where they received instruction in English only, and a Dual Language Immersion (DLI) classroom, where the children received instruction in both Spanish and English.

The second part of the data collection procedure was a student interview (the explanatory task), where the students were asked to explain “how they brush their teeth”. Three female researchers were trained on executing these tasks. These tasks were conducted at the school which the students attended. Students who had consented were asked “Do you want to come play with a robot?”, and if they answered yes, then they were asked to come out of class for a 25-35 minute session to play with a robot. Due to the length of the protocol, students were then invited to play with JIBO (a social robot). The first session included half of the GFTA-3 Sounds-in-Words (SIW) protocol, and the second session included the second half of the SIW and the explanation tasks. Sessions took place in English and they were audio recorded.

Parent Survey. In addition to child assessments, a survey was sent home both electronically and as a paper version and parents were asked to fill out information regarding home language practices, i.e., which language is spoken in the home, frequency of engaging in discourse with your child and frequency of literacy practices. These scores will be separately examined to see if they differ by parent, and if that influences children’s explanatory discourse skills.

Measures

Expressive Vocabulary Knowledge. The data in this study were collected using the Goldman-Fristoe Test of Articulation -Third Edition (GFTA-3) which is a systematic way of assessing an individual’s articulation of the consonants in Standard American English (Goldman & Fristoe, 2015). This is a quantitative measurement that is norm-referenced based on age and gender. The data was collected for the larger project using a social robot named JIBO, where the children would answer using the GFTA-3 vocabulary lists and sentences. Because this study is using a subsample of data from the larger study, we will be focusing on one component of the

GFTA-3, Sounds-in-Words, and we will be using this subcomponent to measure students' expressive vocabulary knowledge; students responded aloud to the stimulus images of objects with the name of the object. Although the words included in the GFTA-3 Sounds in Words component are norm referenced from a phonological perspective, these words are chosen to be grade-level appropriate. From an expressive vocabulary knowledge perspective, which is the perspective in which this assessment was used for this project, both pre-kindergarten and kindergarten students on average were able to produce 53 words of the 58 words. A t-test showed no significant difference between the two grades ($t(68)=0, p>0.99$).

The Sounds-in-Words (SIW) component was scored on a zero-one scale, zero meaning the students didn't produce the word accurately and one meaning they did. The raw score for each child was used for the analysis (i.e., 48 was the score if the child was able to correctly answer 48 out of the 58 words). Each attempt was counted towards the overall score. Since this assessment is measuring the child's English language vocabulary, if the child responded to the image in Spanish, the word was counted as incorrect. If there was no attempt from the child, it was assumed that the child did not know the word and thus that attempt was counted as incorrect. All students in this subsample had the same common denominator of 58 total words, and their raw score used in the analysis was the number of correct words they said out of the 58 shown.

Oral Explanation Assessment. The student's responses were coded and interpreted using the Dynamic Language Learning Progressions (DLLP) Language Features Analysis Protocol (Bailey & Heritage, 2014; 2019). The oral language responses of "how to" prompts were coded in three categories: topic vocabulary, sentence structure, and cohesion/coherence. The DLLP Language Features Analysis Protocol was used to score these categories for each student. The scores ranged from a score of zero to three, not evident to controlled. Both tasks included a score

for the child's sophistication of topic vocabulary, sophistication of sentence structure, and cohesion/coherence of their explanations (Bailey & Heritage, 2014, 2019; Bailey, 2017). Two female researchers were trained to code students' oral explanations and their coding was calibrated.

Cohen's kappa, which takes account of chance agreements ranged from .75 to .80 for the personal teeth cleaning routine, which is considered substantial (Landis & Koch, 1977, Bailey et al., 2020). More specifically, topic vocabulary had a score of .77, sentence structure had a score of .75 and cohesion/coherence a score of .80. Disagreements were resolved by consensus.

Exploratory Vocabulary Measures. I also created two exploratory vocabulary measures from the explanatory discourse responses that the children provided, consisting of an *abstract words* score (i.e., how many abstract words a child used) and an *uncommon words* score (i.e., how often a child used an uncommon word). Abstractness in this study is defined as the ease at which a person can visualize a mental image from an associated word. The harder it is to retrieve a mental image from the word, the more abstract it is argued to be (McDonough et al., 2011). These two measures were created in order to elicit a deeper analysis of the explanatory discourse responses by including the child's usage of abstract and uncommon words in their explanation. Each word that the child produced was given a score of 1 to 4 on abstractness and uncommonness, after which one aggregate score was created for each measure, one for abstractness and one for uncommonness, for each child.

Both of these exploratory vocabulary measures were created using the Word Analyzer Tool created by the American Institutes of Research (AIR). This tool is a product of AIR's Center for English Language Learners and was created in order to capture multiple aspects of the top 4,000 words used in a child's speech (AIR, n.d.). Words in the Word Analyzer Tool were

pulled from Seward's first 4000-word list which was created and provided by Michael Graves (Graves, 2018). The AIR tool allows for users to input English text and then receive an output stating the word's frequency in the English language (i.e., how commonly the word is used), as well as its imageability score (i.e., how abstract the word is). These lists can be used by teachers to create glossaries with definitions as well as for creating prompts and questions to support the acquisition of low frequency and low imageability scored words (Alejandra Martin, Personal Communication, 2020). This was done as a vocabulary lesson for students.

Transcripts of each student's teeth cleaning task were uploaded into the Word Analyzer Tool and a score was automatically generated for each of the words that the child produced. Each word was given a score of 1 to 4, which determined how abstract the word is and how uncommon it is. The words in the Word Analyzer Tool repository are important because together, they account for over 80% of the words in virtually any text. Most students also readily learn to read these words over their first few years in school (Graves, 2018). Those students who are unable to learn them as quickly repeatedly stumble over their words as they are reading, therefore, these 4,000 words are crucial for a student to know and to understand and to be able to read fluently. It is important to note that there are many definitions to a word, and I selected the one that was closest matching to the word in the context of use, and matching on part of speech, so the scoring can be as accurate as possible. For example, the word "mouth" has two definitions, which has two different scores for abstractness. One definition provided by AIR is "part of face", which has an abstractness score of 1, while the second definition is "where river empties", which has an abstractness score of 2. In instances like this, I choose the word that has the closest contextual meaning to the task at hand, in this case, the correct definition for mouth

would be “part of face”, which is important since it has the lower abstractness score of 1 in this context.

Abstractness Score. Abstractness (also known as imageability) is how easily a word gives rise to a sensory mental image (Paivio, Yuille & Madigan, 1968). Abstractness defines and indicates how easily a person can form an associated mental image from that word, thus capturing a unique aspect of the word, i.e., its concreteness. Abstractness is important because it can influence reading accuracy in developing readers (Laing & Hulme, 1999), plays a role in irregular word learning, and affects both word-reading accuracy and rate of word learning (Steady & Compton, 2019). We also know that this then affects storage and processing of words in the mental lexicon (Steady & Compton, 2019). All these factors together, including age of acquisition, frequency, word length and phonological properties affect a word’s abstractness score (Altarriba et al., 1999). Words that are easier to visualize and learn from picture (thus more imageable and less abstract) are acquired at an earlier age than words that are more abstract (thus harder to imagine), regardless if they are nouns or verbs (McDonough et al., 2011).

In order to attain an overall abstract word usage score for each child, I first entered each child’s explanatory discourse transcript into the Word Analyzer Tool. I then created a corpus for each student which included all the words that they used in the explanation of their teeth cleaning task. Each word that they used had an abstractness score and an uncommonness score. The uncommonness score will be explained in more detail in the following section.

AIR’s Word Analyzer Tool provided an abstract word score between 1-4 for each word. Words with a score of 1 are words that are easier to visualize, hence less abstract, and words with a score of 4 are more difficult to visualize, hence more abstract. The children who use words that

have a higher abstractness score (i.e., 4, the highest score) use words that are harder to learn from a picture card or from an image and are therefore harder to describe through visuals. This is highly relevant for this study due to the nature of this explanatory discourse elicitation task, where children are asked to describe how they brush their teeth.

One overall abstractness score was created for each student. This was done by taking the average abstractness score of all the words that were used by each child. The MRC Psycholinguistic database, which is a machine-usable dictionary containing over 150,000 words with up to 26 linguistic and psycholinguistic attributes for each word, assesses the ranges, mean, and standard deviation for groups of words when examining the frequency of occurrence, age of acquisition, and abstractness scores of words (MRC Psycholinguistic database, n.d.). In assessing which descriptive statistic to employ to capture and summarize the overall abstract word usage score of a student, I considered the mean, median and mode. I wanted to make sure not to reward or penalize students' scores for their relative verbosity, while also creating an aggregate measure that would aid in data analysis. Like the MRC database, I decided that creating a mean abstractness score for each student would be the most effective way to analyze my data. The mean abstractness score captures the total score of each word used by each student and divides it by the number of all scored words that the student used. The AIR abstractness score for each word was used to create one abstractness score for each child's used lexicon during the explanation task.

Uncommon Words Score. AIR's Word Analyzer Tool also provides a measure of how often that word is used in the English language for each word used, which is how often and how commonly, or uncommonly, the word is used in the English language. For the purposes of this study, the frequency of a word will from here on out be referred to the commonality of the word

used. Typically, the words that are used more frequently are easier words, while the words used less frequently tend to be uncommon words. The words in AIR's word bank are divided into a total of four quartiles, which is what I used to assign scores to the words.

Each word is given a score of 1-4 indicating which quartile this word was found in according to the database of children's 4,000 most frequent words through AIR's Word Analyzer Tool (Graves, 2018). The words with a score of 1 are the most common words, and therefore the easier words to learn and use, and those words with a score of 4 are more difficult to learn since they are uncommon for children and are used more infrequently, being rarer for a child to use. In order to create a composite frequency score for each child, similar to how I created the abstractness score, I averaged the uncommonness scores for each word used by a given child.

Therefore, for both abstract words and uncommon words score coding, a lower score means that the word was easier to learn, and a higher score means the word was more difficult to learn. Abstractness captures the difficulty of processing a mental image from hearing or seeing a word (i.e., how easy it is to retrieve an image for that word), and uncommonness captures the rarity of each individual word in the English language (i.e., a word that is more commonly used is ranking lower and a word that is less frequently used in the English language is ranked higher).

Parent Measure. I included two questions from the parent survey; how often do you talk with your child about things you have done, and how often do you talk with your child about what he/she is reading on his/her own. The survey response measure had four response options and they varied from every day/almost every day to never/almost never. The responses were coded from 1-4, with never/almost never scored as 1 and everyday/almost every day receiving a score of 4.

Analytic Plan

First, I conducted descriptive statistics to describe the characteristics of my sample. I did this by summarizing the measures of central tendency (i.e., mean, median, mode) and variability (range, standard deviation, variance) (Mertens, 2019), and closely observing the shape of distribution to check on assumptions such as normal distribution and any outliers for later conducting inferential statistical analyses. I then checked to see if ethnicity, cohort, gender, program type, and home language are correlated with the three outcome explanatory discourse variables; topic vocabulary, sentence structure and cohesion/coherence. I then conducted correlational statistics to see if my independent and dependent variables are related, and to describe the strength and direction between my independent and dependent variables. This included vocabulary knowledge and home language factors as my independent variables, and the three factors of explanatory discourse outcome as my outcome variables. After conducting correlational statistics to see if the independent and dependent variables were related, I then conducted two multivariate multiple regressions, one for each research question.

For my first research question, I conducted multiple linear regressions with Sounds in Words (SIW) vocabulary knowledge from the GFTA-3 and the two exploratory vocabulary measures as predictors, and two explanatory discourse features as my dependent variables: sentence structure, and cohesion/coherence. This model included covariates if any of them are found to be significantly correlated with my outcome variables, i.e. if ethnicity, cohort, gender, program type, and home language are correlated with any of the three explanatory discourse outcome variables, I controlled for them in my model.

For my second research question, I looked at a smaller subset of children whose parents filled out the survey and examine the relationship between the frequency of parental talk with

their children and the child’s explanatory discourse scores. First, I checked to see if the following three factors from the parent survey are correlated; frequency of parent talk with child about things they have done together, frequency of parent talk with children about the child’s independent reading, and frequency of parent talk with child about the child’s reading in school.

A power analysis was also conducted in order to determine statistical power. In order to obtain an anticipated effect size of Cohen’s $f^2 = 0.35$ (this represents a large effect size)¹, a desired statistical power level of 0.95, and with 2 predictors, I need a minimum required sample size of 47, which I have (Cohen, 1988; Soper, 2020). This effect size is comparable to similar studies that observe the relationship between vocabulary knowledge and discourse development (Hadley et al., 2016; Nagy & Townsend, 2012).

Results

Descriptive Statistics for Explanatory Discourse Measures

There was a total of six oral explanatory measures that were measured for each student ($n=70$). An overview of the descriptive statistics for each measure is presented in Table 4.

Table 4

Descriptive Statistics for the Six Vocabulary Measures

Variable	Mean	SD	Median	Mode	Min	Max
GFTA-3 SIW	53	5.89	55	56	25	58
TCV	1.23	0.86	1.00	2	0	3
TCSS	1.27	0.60	1.00	1	0	2
TCCC	0.45	0.49	0.50	0	0	2
Abstractness	2.34	0.79	2.50	0	0	3.42
Uncommonness	1.03	0.32	1.06	1	0	1.80

Note: I am only including descriptive items for the vocabulary measures since the descriptive statistics of student demographics can be found in the Measures section. The acronyms stand for the three outcome variables for the three explanatory discourse categories about a personal

¹ Cohen’s f^2 method measure the effect size for multiple regressions.

routine for teeth cleaning: vocabulary (TCV), sentence structure (TCSS) and cohesion/coherence (TCCC).

Correlations between Discourse and Background Measures

I first conducted Shapiro-Wilks tests for normality for the distribution of the scores in the dataset. All measures were found to be non-normal, therefore I used a non-parametric measure of correlation, i.e. Spearman's Rho. The GFTA-3 Sounds in Words (SIW) measure was skewed toward the lower values. I removed three outliers in an attempt to normalize the distribution, however, the distribution was still skewed left, therefore we decided to leave the outliers in the analysis since there was not much variation. I also conducted a Chi-Square Test of Independence on our dichotomous variables; cohort, class type, gender, and grade, however, I did not find any significance.

Initial Spearman correlations showed weak relationships between all variables of interest, with the exception of the relationships between the pre-existing established connections between the students' three DLLP explanation task measures in their personal routine (Bailey & Heritage, 2014); explanation of teeth cleaning topic vocabulary measure (TCV), sentence structure measure (TCSS), and cohesion/coherence measure (TCCC). These correlations can be seen in Table 5 and Table 6.

Since there was a highly positive, significant correlation between TCV and Uncommonness, it raised concerns of multicollinearity and therefore I did not to use TCV in the regression analyses for the first research question. Additionally, I wanted to see how the vocabulary measures that were created in this study would affect TCCC and TCSS outcomes separate from the Explanation Topic Vocabulary measure. Furthermore, the personal routine explanation topic vocabulary was positively correlated with grade. There was also a significant

positive correlation between how often a parent selected that they talk about reading in the home with how often parents selected they discuss class reading in the home.

Furthermore, there were negative correlations between the abstractness measure and the date that the data was collected (cohort, either fall or winter) and the student's home language (e.g., English or Spanish). There were also negative correlations between how often parents reported talking to their children about things happening and class type (i.e., EMI or DLI) and language other than English spoken in the home.

Table 5

Correlations between Vocab Measures and Background Variables

	1	2	3	4	5	6	7	8	9	10
1. Cohort	--									
2. Class Type	NA	--								
3. Gender	NA	NA	--							
4. Grade	NA	NA	NA	--						
5. TCCC	.167	.157	-.044	.029	--					
6. TCV	.058	.078	-.142	.246*	.422*	--				
7. TCSS	-.071	.167	-.127	.178	.480*	.568*	--			
8. Abstract	-.306*	-.041	-.169	-.190	-.075	-.102	0.63	--		
9. Uncommon	.048	.141	-.141	.024	.342*	.553*	.421*	-.042	--	
10. GFTA	.052	-.182	-.213	.148	.127	.192	.204	-.047	.052	--

Note: * p<.05

Table 6

Correlations between Vocab Measures, Home Language and Classroom Variables

	1	2	3	4	5	6	7	8	9	10	11	12
1. TCCC	--											
2. TCV	.422*	--										
3. TCSS	.480*	.568*	--									
4. Abstract	-.075	-.102	0.63	--								
5. Uncom.	.342*	.553*	.421*	-.042	--							
6. GFTA	.127	.192	.204	-.047	.052	--						
7. Eng/Span	.279	-.032	-.252	-.607*	.138	.153	--					
8. Eng/Oth	.053	.201	.263	.086	.108	-.191	-.365	--				
9. Lang Oth	-.279	-.337	-.288	.321	-.282	-.34	-.219	-.2	--			
10. Talk_T	.326	.338	.23	-.36	.278	.191	.175	.161	-.8*	--		
11. Talk_R	-.124	.307	-.007	-.211	.053	.139	-.083	.034	.024	.117	--	
12. Dis_CR	-.206	.14	-.015	-.255	-.097	.166	-.033	-.377	.082	.078	.494*	--

Note: * p<.05

Associations between Vocabulary Measures and Background Variables

Research question 1: How is expressive oral vocabulary knowledge related to children's production of sentence structure and cohesion/coherence in their oral explanations?

For research question 1, multiple linear regression models were built to examine how expressive oral vocabulary affects students' sentence structure and cohesion/coherence performance in an oral explanation task. Separate multiple linear regressions were built using students' sentence structure and cohesion/coherence as outcome variables and abstractness, uncommonness, and GFTA vocabulary measures as predictor variables, controlling for background variables grade, class type, gender, and cohort. These models were built separately, and the predictors were added into the model in no particular order.

Sentence Structure. Multiple linear regression models were also built to explore the effects of vocabulary knowledge on sentence structure, controlling for grade, program type, gender, and cohort. Background measures were also added sequentially, and there was no significance throughout the different models. Model 1 shows the effects of background variables on students' sentence structure scores. Each vocabulary measure was then added sequentially to determine their effects on sentence structure. Table 6 below shows that student's abstractness scores are significant (Model 2a, $p < .001$), however, when adding students' uncommon words scores ($p < .05$) and general vocabulary knowledge, GFTA ($p < .05$), to the model, abstractness drops in significance. We can see in Model 2b that uncommonness is highly significant when added into the model separately and remains significant when the other vocabulary measures are added into the model. In Model 4, we can see that uncommonness of words used and GFTA measures positively relate to students' sentence structure score, when background variables are controlled for. These findings suggest that, on average, students' scores on sentence structure are

significantly affected by the amount of uncommon words they use and their overall vocabulary knowledge (GFTA). Please see Table 7 below.

Table 7

Multiple Linear Regression Models Predicting Students' DLLP Explanation Task Sentence Structure from Abstractness, Uncommonness, GFTA-3 SIW, Controlling for Grade, Class Type, Cohort and Gender

Parameter	Model 1	Model 2a	Model 2b	Model 2c	Model 3	Model 4
	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)
Intercept	1.21(0.17)***	0.45(0.29)	0.35(0.27)	-0.08(0.70)	0.25(0.30)	-1.05(0.68)
Grade	0.22(0.14)	0.26(0.14)	0.22(0.13)	0.24(0.14)	0.23(0.13)	0.25(0.13)
Class Type	0.29(0.15)	0.27(0.14)	0.18(0.13)	0.35(0.15)*	0.20(0.14)	0.26(0.14)
Gender	-0.20(0.15)	-0.20(0.14)	-0.18(0.13)	-0.15(0.15)	-0.18(0.13)	-0.13(0.13)
Cohort	-0.18(0.14)	-0.04(0.14)	-0.08(0.14)	-0.22(0.14)	-0.05(0.14)	-0.09(0.53)
Abstractness		0.29(0.09)***			0.11(0.12)	0.12(0.11)
Uncommonness			0.81(0.20)***		0.64(0.28)*	0.61(0.27)*
GFTA- 3 SIW				0.02(0.01)		0.02(0.01)*
<i>R</i> ² (%)	10.82	23.69	28.74	15.59	29.71	33.47

Note. *** $p < .001$, ** $p < .01$, * $p < .05$

Coherence/Cohesion. Multiple linear regressions were also built for coherence/cohesion, adding in the background variables first and then the vocabulary measures. None of the background variables showed significance when added in sequentially. We can see in Model 2b that uncommonness has slight significance on children’s cohesion/coherence skills, however, drops in significance when the other predictors are added into the model. Multiple linear regressions showed that on average, vocabulary knowledge, based on abstractness, uncommonness, and GFTA-3 SIW, had no significant effect on students’ cohesion/coherence scores. See Table 8 below.

Table 8

Multiple Linear Regression Models Predicting Students’ DLLP Explanation Task Cohesion/Coherence from Abstractness, Uncommonness, and GFTA-3 SIW, Controlling for Grade, Class Type, Cohort and Gender

Parameter	Model 1	Model 2a	Model 2b	Model 2c	Model 3	Model 4
	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)
Intercept	0.28(0.14)*	0.00(0.26)	-0.13(0.24)	-0.51(0.59)	-0.13(0.27)	-0.90(0.63)
Grade	0.04(0.12)	0.04(0.12)	0.03(0.12)	0.05(0.12)	0.03(0.12)	0.03(0.12)
Class Type	0.17(0.12)	0.16(0.12)	0.11(0.12)	0.21(0.12)	0.11(0.12)	0.15(0.13)
Gender	-0.02(0.12)	-0.03(0.12)	-0.02(0.12)	0.01(0.12)	-0.02(0.12)	0.01(0.12)
Cohort	0.15(0.12)	0.20(0.13)	0.20(0.12)	0.13(0.12)	0.20(0.13)	0.17(0.13)
Abstractness		0.11(0.08)			-0.00(0.11)	0.00(0.11)
Uncommonness			0.40(0.19)*		0.41(0.25)	0.39(0.25)
GFTA-3 SIW				0.01(0.01)		0.01(0.01)
<i>R</i> ² (%)	5.985	8.269	11.91	8.638	11.92	14.47

Note. ****p* < .001, ***p* < .01, **p* < .05.

Associations between Home Discourse Environment and DLLP Explanation Task Features

Research question 2: How is the expressive home discourse environment, as determined through parent reports, related to children's topic vocabulary knowledge, sentence structure, and cohesion/coherence in their oral explanations?

For research question 2, multiple linear regression models were built to examine how home discourse practices, as reported by parents, affect students' topic vocabulary scores, sentence structure, and cohesion/coherence. In order to do so, multiple linear regressions were built using students' DLLP explanation task measure scores as outcome variables and parents' ratings of how often they talk to their child about things they have done and how often they discuss class readings with their child as predictor variables. The models were built with the three explanatory measures, topic vocabulary, sentence structure, and cohesion/coherence as outcome variables and the two home discourse measure as the predictors. The two home discourse measures were added in sequentially and randomly. We then added two background variables, grade and class type, as predictors in the model as well, as we thought those would be important to include.

Topic Vocabulary. Multiple linear regressions showed that on average, the frequency of parental talk with their child about things they have done had a significant effect on students' topic vocabulary scores. In addition, grade level also had a significant effect on students' vocabulary scores.

In Model 2a, we see a significant intercept ($p < .01$), and significant positive coefficient for grade ($ECI=0$, $p < .001$) and frequency of talking to your child about things you have done ($p < .01$). Meanwhile, we observe that frequency of discussion with your child about classroom readings is not related to the child's topic vocabulary score. As we add class type into the model

(EMI=0), we see that talking about things remains significant while discussing class reading remains not significant. See Table 9 below.

Table 9

Multiple Regression Models Predicting Students' DLLP Explanation Task Topic Vocabulary from Parent Behaviors Controlling for Grade and Class Type

Parameter	Model 1	Model 1a	Model 1b	Model 2	Model 2a	Model 2b	Model 3
	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)	B (SE)
Intercept	0.64(0.30)*	-3.10(2.33)	1.09(0.48)*	-3.52(2.31)	-6.92(2.19)**	0.58(0.59)	-7.43(2.35)**
Grade	0.85(0.33)*				1.06(0.27)***	0.74(0.35)*	0.97(0.30)**
Class Type	0.13(0.32)				0.56(0.29)	0.13(0.35)	0.63(0.32)
Talk_Things		1.12(0.60)		1.17(0.58)	1.85(0.53)**		1.90(0.55)**
Disc_ClassRead			0.08(0.15)	0.08(0.15)		0.06(0.16)	0.13(0.13)
R ² (%)	21.39	12.02	1.074	15.64	47.67	16.89	46.41

Note. *** $p < .001$, ** $p < .01$, * $p < .05$.

Sentence structure. Multiple linear regressions showed that on average, home discourse practices had no significant effect on students' sentence structure scores. Similarly, talking about things and discussing classroom reading with children, on average, had no significant effect on children's sentence structure scores. See Table 10 below.

Table 10

Multiple Regression Models Predicting Students' DLLP Explanation Task Sentence Structure from Parent Behaviors Controlling for Grade and Class Type

Parameter	Model 1	Model 1a	Model 1b	Model 2	Model 2a	Model 2b	Model 3
	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)
Intercept	1.37(0.24)***	-0.38(0.46)	1.71(0.38)	-0.17(1.91)	-2.18(2.074)	1.54(0.48)**	-2.04(2.28)
Grade	-0.07(0.27)				0.03(0.26)	-0.12(0.29)	-0.02(0.29)
Class Type	0.34(0.26)				0.55(0.27)	0.29(0.31)	0.52(0.31)
Talk_Things		0.46(0.47)		0.48(0.47)	0.87(0.50)		0.85(0.53)
Disc_ClassRead			-0.09(0.12)	-0.09(0.12)		-0.03(0.80)	-0.00(0.13)
<i>R</i> ² (%)	7.212	3.644	2.114	6.056	17.49	7.33	16.98

Note. *** $p < .001$, ** $p < .01$, * $p < .05$.

Cohesion/coherence. Multiple linear regressions showed that on average, the frequency of parental talk with their child about things they have done had a significant effect on students' cohesion/coherence scores. In addition, class type also had a significant effect on students' cohesion/coherence scores. This is similar to the outcomes we see in Table 8, where talking about things has a significant effect on aspects of children's explanation task skills. See Table 11 below.

Table 11

Multiple Regression Models Predicting Students' DLLP Explanation Task Cohesion/Coherence from Parent Behaviors Controlling for Grade and Class Type

Parameter	Model 1	Model 1a	Model 1b	Model 2	Model 2a	Model 2b	Model 3
	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)	<i>B</i> (SE)
Intercept	0.50(1.20)*	-1.79(1.45)	0.99(0.30)**	-1.26(1.43)	-3.66(1.53)*	0.75(0.37)	-3.51(1.61)*
Grade	-0.38(0.21)				0.04(0.20)	0.03(0.22)	0.15(0.20)
Class Type	0.32(0.21)				0.56(0.20)*	0.28(0.22)	0.55(0.22)*
Talk_Things		0.60(0.37)		0.57(0.36)	1.02(0.37)*		1.01(0.37)*
Disc_ClassRead			-0.15(0.09)	-0.15(0.09)		-0.11(0.10)	-0.07(0.09)
<i>R</i> ² (%)	9.753	9.206	9.877	18.64	31.14	15.66	36.74

Note. *** $p < .001$, ** $p < .01$, * $p < .05$.

Discussion

The purpose of this correlational, exploratory study was to examine the influence of vocabulary knowledge and home discourse practices on preschool and kindergarten children's topic vocabulary, sentence structure, and cohesion/coherence during explanatory discourse. The main objective was to create three types of vocabulary measures, general vocabulary knowledge (derived from GFTA-3 SIW), word abstractness, and word uncommonness, and to examine how these newly formed measures, in addition to the home discourse practices, are related to the aforementioned aspects of their explanatory discourse.

Relationship between Vocabulary Skills and Aspects of Oral Explanation Skills

The findings partially supported the hypothesis that children who perform better on vocabulary tasks would also perform better on other linguistic aspects of oral explanations, however, only students who performed better on uncommonness and GFTA-3 performed better on the sentence structure aspect of their explanations. One explanation might be that cohesion/coherence scores for the children overall were very low, with around half of the students receiving a score of 0, whereas the scores for sentence structure are more widely distributed. These findings suggest that, on average, students' scores on sentence structure are significantly affected by the number of uncommon words they use and their overall vocabulary knowledge. This tells us that both uncommon words used by the student, as well as their general vocabulary knowledge positively affects their sentence structure score for the teeth brushing explanation task that they were asked to explain. We also see that background variables like grade, class type, gender and cohort do not have an effect on sentence structures skills.

When assessing cohesion/coherence, we saw that frequency of abstract words used affects cohesion/coherence, however, it gets masked by the uncommon words and general

vocabulary knowledge GFTA variable in Table 8 and drops in significance. Background variables like grade, class type, gender, and cohort do not have an effect on coherence/cohesion skills. While we cannot be certain why uncommon words affects cohesion/coherence, it might be the case that connecting words used to make utterances more intelligible are used less frequently in children's speech, according to the 4,000 words database used through AIR (Graves, 2018). Therefore, the more uncommon words a child used, the higher they scored on aspects of cohesion and coherence in their teeth cleaning explanation task.

Relationship between Home Discourse Environment and Oral Explanation Skills

The findings also supported the hypothesis that the more language rich environment that children have at home, the better they will perform on aspects of the oral explanation task; however, results were only significant for their topic vocabulary skills and cohesion/coherence aspects of the explanatory discourse task. Interestingly, frequency of discussing child's classroom reading was not significant for either of our explanatory task measures. The only measure that was significant was the frequency of parental talk with their child about things they have done, more specifically significant for topic vocabulary and cohesion/coherence outcome variables.

Interestingly, grade level was also significant when examining home discourse environment and its effect on topic vocabulary. One reason might be that the higher the child's grade is, the more conversations their parents have with them, which means it is more likely for the child to know and learn a wide array of vocabulary words, thus performing better on teeth cleaning topic vocabulary. It is also more likely that parents talk to their children about their teeth cleaning since it is a task performed in the home, which will ultimately contribute to their teeth cleaning topic vocabulary knowledge.

There was no significant effect of home discourses practices, grade, or class type on sentence structure. It is possible that having to recall vocabulary words from their lexicon was cognitively taxing, therefore, the children would constantly pause and start sentences over, which is influencing their sentence structure score. Engaging in a teeth cleaning task that usually happens in the home in a school setting means they need to recall something out of context, which might be leaving the children scrambling to find the words to talk about the topic, therefore, leaving them with fewer cognitive resources to complete fully structured sentences. It is also possible that the verbal act of explaining this task in order of execution (i.e., wet toothbrush, apply paste, etc.) requires a great number of steps, and using complete sentences to link the order of tasks together created more opportunities for students to use incomplete sentences.

We see that talking about things at home and class type (EMI or DLI) had a positive effect on student's cohesion/coherence scores. Similarly, to what was discussed above, it could be the case that children are picking up on more recognizable cohesive devices through talking with their parents and that ultimately helps them formulate what they are trying to say.

Limitations

One limitation is that this is a correlational study, therefore, we cannot be certain that vocabulary knowledge causes higher explanatory discourse skills. We cannot disregard the fact that a potential extraneous variable that could be affecting the correlations. Another limitation is the lack of ability to generalize the findings from this study. Since this sample was collected from a university affiliated school in the Los Angeles County, it cannot be generalizable across different types of schools (i.e., public schools). Further studies should also examine pedagogical differences in the classroom, since that might affect student's oral language and explanatory

discourse abilities. Another limitation is that we don't have data on the type or the quality of parent discourse in the home environment. There is also a very diverse sample of students (which is a strength and a limitation) in this study, however, this provides a future display of how dual language immersion programs will look and how diverse they are in real time.

Conclusion

The findings from this study highlight the nuances in how different factors effect children's explanatory discourse skills. This study created two new variables, an abstract words variable and an uncommon words variable in order to assess how these different vocabulary aspects influence how children in preschool and kindergarten explain how they brush their teeth. This study goes beyond just informing us of vocabulary assessments, but it informs us about vocabulary knowledge in context. This study also informs us of the factors that support childhood explanatory discourse skills in the home and in school contexts.

These finding can help inform teacher preparation and teacher practices in the classroom by emphasizing the importance of students' explanatory discourse abilities, as well as home discourse practices that are applied by parents. I found that uncommonness and general vocabulary knowledge (as derived from the GFTA-3 SIW) positively influence children's sentence structure skills. There is an implication that teachers and parents should use more uncommonly used words, in addition to general vocabulary words, while speaking to their children. Teachers should try to initiate more conversations and more vocabulary exercises that will support the growth of children's general and uncommon vocabulary lexicon.

This study also informed which language practices in the home help foster young children's explanatory discourse skills. We can see that the frequency of parents talking to their children about things they have done positively influences children's vocabulary and

cohesion/coherence skills. As a result, parents should be spending more time talking to their children about general activities and tasks that they have done.

The two new vocabulary variables that were created, in conjunction to being assessed with the GFTA-3 as a general vocabulary measure, also informed us of the intricacies of vocabulary specific effects on aspects of children's explanatory discourse skills. Unlike previous studies, this study examined the types of vocabulary words used; general, abstract, and uncommon. As a result, we find that general vocabulary and uncommon vocabulary positively affect students sentence structure skills. With more research examining the detailed types of vocabulary words used with these measures, we can understand children's vocabulary knowledge and its effects on aspects of oral discourse on a deeper and finely defined level.

Future directions might involve looking at which words were more/less difficult for the students to produce, the rate of frequency at which a child was producing words per minute, and classroom differences. With a larger sample size and with more vocabulary measures included, we would be able to capture a comprehensive view of children's vocabulary skills and how it relates to their explanatory discourse abilities.

References

- Altarriba, J., Bauer, L.M., Benvenuto, C. (1999). Concreteness, context-availability, and imageability ratings and word associations for abstract, concrete, and emotion words. *Behavioral Research Methods Instruments & Computers*, 31, 578–602.
- Anderson, S. E., Farmer, T. A., Goldstein, M., Schwade, J., & Spivey, M. (2011). Individual differences in measures of linguistic experience account for variability in the sentence processing skill of five-year-olds. In I. Arnon & E. Clarke (Eds.), *Experience, variation, and generalization: Learning a first language* (pp. 203-221). Amsterdam: John Benjamins Publishing Company.
- Bailey, A. L. (2017). Progressions of a new language: characterizing explanation development for assessment with young language learners. *Annual Review of Applied Linguistics*, 37, 241-263.
- Bailey, A. L., Blackstock-Bernstein, A., Heritage, M. (2015). At the intersection of mathematics and language: Examining mathematical strategies and explanations by grade and English learner status. *Journal of Mathematical Behavior*, 40, 6-28.
<https://dx.doi.org/10.1016/j.jmathb.2015.03.007>
- Bailey, A. L., & Heritage, M. (2014). The role of language learning progressions in improved instruction and assessment of English language learners. *TESOL Quarterly*, 48(3), 480-506.
- Bailey, A.L. & Heritage, M. (2019). *Progressing Students' Language Day by Day*. Thousand Oaks, CA: Sage/Corwin Press.
- Bailey, A. L., Martin, A., Pogossian, A. A., Quintero Perez, M., Yeung, G., J., Alwan, A., Afshan, A. (2020). *Early Literacy and Oral Language Ties: Extending the range of*

- human-computer interface for early assessment*. Paper presentation at the annual American Educational Research Association (AERA) (conference cancelled).
- Bailey, A.L., Moughamian, A. C., Reynolds, K. K., McCabe, A., & Huang, B. (2018). Leap frog to literacy: maternal narrative supports differentially relate to child oral language and later reading outcomes, *Early Child Development and Care*, *190*(70), 1136-1149.
<https://doi.org/10.1080/03004430.2018.1521807>
- Beals, D. (1993). Explanatory talk in low-income families' mealtime conversations. *Applied Psycholinguistics*, *14*(4), 489–514.
- Bedore, L. M., & Pena, E. D. (2008). Assessment of bilingual children for identification of language impairment: Current findings and implications for practice. *International Journal of Bilingual Education and Bilingualism*, *11*(1), 1-29.
- Bergen, P. V., Salmon, K., Dadds, M. R., & Allen, J. (2009). The effects of mother training in emotion-rich, elaborative reminiscing on children's shared recall and emotion knowledge. *Journal of Cognition and Development*, *10*(3), 162-187.
- Bruner, J. (1983). *Child's Talk: Learning to Use Language*. New York: Norton.
- Bus, A. G., Van Ijzendoorn, M. H., & Pellegrini, A. D. (1995). Joint book reading makes for success in learning to read: A meta-analysis on intergenerational transmission of literacy. *Review of educational research*, *65*(1), 1-21.
- Chaney, C. (1994). Language development, metalinguistic awareness, and emergent literacy skills of 3-year-old children in relation to social class. *Applied psycholinguistics*, *15*(3), 371-394.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.

- Cohen, N.J. (2010). The Impact of Language Development on the Psychosocial and Emotional Development of Young Children. *Encyclopedia on Early Childhood Development. Language Development and Literacy 2nd edition.*
- Deckner, D. F., Adamson, L. B., & Bakeman, R. (2006). Child and maternal contributions to shared reading: Effects on language and literacy development. *Journal of Applied Developmental Psychology, 27*(1), 31-41.
- De Houwer, A. (2007). Parental language input patterns and children's bilingual use. *Applied psycholinguistics, 28*(3), 411-424.
- Dickinson, D. K., Golinkoff, R. M., Hirsh-Pasek, K. (2010). Speaking out for language: why language is central to reading development. *Educational Researcher, 39*(4), 305-310.
- Fivush, R., Reese, E., & Haden, C. A. (2006). Elaborating on elaborations: Role of maternal reminiscing style in cognitive and socioemotional development. *Child Development, 77*, 1568–1588. <https://doi.org/10.1111/j.14678624.2006.00960.x>
- Fung, W. K., Chung, K. K. H., & Cheng, R. W. Y. (2019). Gender differences in social mastery motivation and its relationships to vocabulary knowledge, behavioral self-regulation, and socioemotional skills. *Early Education and Development, 30*(2), 280-293.
- Graves, Michael (2018). <https://michaelfgraves.net/>
- Hadley, E. B., Dickinson, D. K., Hirsh-Pasek, K., Golinkoff, R. M., Nesbitt, K. T. (2016). Examining the acquisition of vocabulary knowledge depth among preschool students. *Reading Research Quarterly, 51*(2), 181-198.
- Harmer, J. (2001). *The Practice of English Language Teaching*. Harlow: Pearson Education.
- Hoff, E. (2013). *Language Development. (5th Edition)*. Belmont, CA: Wadsworth/Thomson Learning.

- Hovsepian, A. (2017). Vocabulary growth in Armenian-English bilingual kindergarteners. *First Language, 1-25*.
- Howard, E. R., Pérez, M. M., August, D. L., Barr, C. D., Kenyon, D., & Malabonga, V. (2014). The Importance of SES, Home and School Language and Literacy Practices, and Oral Vocabulary in Bilingual Children's English Reading Development, *Bilingual Research Journal, 37:2*, 120-141, <https://doi.org/10.1080/15235882.2014.934485>.
- Jong, E. (2002). Effective Bilingual Education: From Theory to Academic Achievement in a Two-Way Bilingual Program. *Bilingual Research Journal, 26(1)*.
- Laing, E., & Hulme, C. (1999). Phonological and semantic processes influence beginning readers' ability to learn to read words. *Journal of experimental child psychology, 73(3)*, 183–207. <https://doi.org/10.1006/jecp.1999.2500>
- Lazaraton, A. (2001). Teaching Oral Skills. In M. Celce-Murcia (Ed.), *Teaching English as a second foreign language*. Boston: Heinle and Heinle.
- Lee, J. (2011). Size matters: Early vocabulary as a predictor of language and literacy competence. *Applied Psycholinguistics, 32*, 69-92.
- Lao, C. (2004). Parents' Attitudes Toward Chinese–English Bilingual Education and Chinese-Language Use, *Bilingual Research Journal, 28:1*, 99-121, <https://doi.org/10.1080/15235882.2004.10162614>
- Levelt, J. M. W., Roelofs, A., Meyer, S. A. (1999). A theory of lexical access in speech production. *Behavioral and Brain Sciences 22*, 1-17.
- Lindquist, K.A., MacCormack, J.K., & Shablack, H. (2015) The role of language in emotion: predictions from psychological constructionism. *Hypothesis and Theory, 6*, 444. <https://doi.org/10.3389/fpsyg.2015.00444>

- Lonigan, C. J., & Shanahan, T. (2010). Developing early literacy skills: Things we know we know and things we know we don't know. *Educational Researcher*, 39(4), 340-346.
- Marchman, V., & Bates, E. (1994). Continuity in lexical and morphological development: A test of the critical mass hypothesis. *Journal of Child Language*, 21, 339–366.
- McDonough et al. (2011). An image is worth a thousand words: why nouns tend to dominate verbs in early word learning. *Developmental Science*, 14(2), 181-189.
- McGregor, K., Sheng, L., & Smith, B. (2005). The precocious two-year-old: Status of the lexicon and links to the grammar. *Journal of Child Language*, 32, 563–585.
- Mertens, D. (2019). *Research and Evaluation in Education and Psychology* (5th Edition). Thousand Oaks, CA: Sage Publications.
- Mezynski, K. (1983). Issues concerning the acquisition of knowledge: Effects of vocabulary training on reading comprehension. *Review of Educational Research*, 53(2), 253-279.
<http://dx.doi.org/10.2307/1170386>
- Mishina, S. (1999). The role of parental input and discourse strategies in the early language mixing of a bilingual child. *Multilingual Journal of Cross-Cultural and Interlanguage Communication*, 18(4), 317-342.
- MRC Psycholinguistic Database. (n.d.). Retrieved February 22, 2021, from https://websites.psychology.uwa.edu.au/school/mrcdatabase/uwa_mrc.htm
- Nagy, W. & Townsend, D. (2012). Words as tools: Learning academic vocabulary as language acquisition. *Reading Research Quarterly*, 47(1), 91-108.
- Nicoladis, E., & Genesee, F. (1997). Language development in preschool bilingual children. *Journal of Speech Language Pathology and Audiology*, 21(4), 258-270.

- Nunan, D. (2003). *Listen In: A three-level listening series*. Second edition. Boston: Heinle / Thomson Learning.
- Paradis, J., & Navarro, S. (2003). Subject realization and crosslinguistic interference in the bilingual acquisition of Spanish and English: What is the role of the input? *Journal of child language*, 30(2), 371-393.
- Paivio, A., Yuille, J.C., & Madigan, S.A. (1968). Concreteness, imagery, and meaningfulness values for 925 nouns. *Journal of Experimental Psychology*, 76, 1–25.
- Peterson, C., Morris, G., Baker-Ward, L., & Flynn, S. (2013, June 3). Predicting Which Childhood Memories Persist: Contributions of Memory Characteristics. *Developmental Psychology*. Advance online publication. <https://doi.org/10.1037/a0033221>
- Rowe, M. L. (2012). A longitudinal investigation of the role of quantity and quality of child directed speech in vocabulary development. *Child Development*, 83(5), 1762-1774.
- Scarborough, H. S., & Dobrich, W. (1994). On the efficacy of reading to preschoolers. *Developmental Review*, 14, 245–302.
- Schick, A., & Melzi, G. (2010). The development of children’s oral narratives across contexts. *Early Education and Development*, 21(3), 293-317.
- Schmitt, N. (2014). Size and Depth of Vocabulary Knowledge: What the Research Shows. *Language Learning*, 64(4), 913-951.
- Sénéchal, M., & LeFevre, J. A. (2002). Parental involvement in the development of children’s reading skill: A five-year longitudinal study. *Child development*, 73(2), 445-460.
- Snow, C. E. (1991). The theoretical basis for relationships between language and literacy in development. *Journal of Research in Childhood Education*, 6(1), 5–10.

- Soper, D.S. (2020). A-priori Sample Size Calculator for Multiple Regression [Software].
Available from <http://www.danielsoper.com/statcalc>
- Steady, L. M., & Compton, D. L. (2019). Examining the role of imageability and regularity in word reading accuracy and learning efficiency among first and second graders at risk for reading disabilities. *Journal of Experimental Child Psychology*, 178, 226-250. <https://doi.org/10.1016/j.jecp.2018.09.007>
- Tabors, P. O., Snow, C. E., & Dickinson, D. K. (2001). Homes and schools together: Supporting language and literacy development. In D. K. Dickinson & P. O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 313-334). Baltimore, MD, US: Paul H Brookes Publishing.
- Thordardottir, E. (2015). The relationship between bilingual exposure and morphosyntactic development. *International Journal of Speech-Language Pathology*, 17(2), 97-114, <https://doi.org/10.3109/17549507.2014.923509>
- Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard UP.
- Word analyzer tool. (n.d.). Retrieved February 22, 2021, from <https://vocabularytool.airprojects.org/index.php?s=visitorapogo20210222003818>
- Yovanoff, P., Duesbery, L., Alonzo, J., & Tindal, G. (2005). Grade-level invariance of a theoretical causal structure predicting reading comprehension with vocabulary and oral reading fluency. *Educational Measurement: Issues and Practice*, 24(3), 4-12.