

Early-Adolescents' Reading Comprehension and the Stability of the Middle School Classroom-Language Environment

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This study examined teachers' language use across the school year in 6th grade urban middle-school classrooms ($n = 24$) and investigated the influence of this classroom-based linguistic input on the reading comprehension skills of the students ($n = 851$; 599 language minority learners and 252 English-only) in the participating classrooms. Analysis of speech transcripts revealed substantial variability in teachers' use of sophisticated vocabulary and total amount of talk and that individual teacher's language use was consistent across the school year. Analyses using Hierarchical Linear Modeling showed that when controlling for students' reading comprehension and vocabulary knowledge at the start of the year, teachers' use of sophisticated vocabulary was significantly related to students' reading comprehension outcomes, as was the time spent on vocabulary instruction. These findings suggest that the middle school classroom language environment plays a significant role in the reading comprehension of adolescent learners.

Keywords: language input, reading comprehension, sophisticated, academic language, teacher, middle school

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The literacy rates in the United States suggest that many students are at risk for academic failure. A recent report of the National Assessment of Educational Progress showed that only 34% of eighth grade students scored at or above proficient levels in reading comprehension (National Center for Education Statistics [NCES], 2011). In addition, approximately 1.2 million students nationwide do not graduate high school on time (Alliance for Excellent Education, 2009), with inadequate literacy skills being one of the commonly cited reasons for student dropout (Alliance for Excellent Education, 2009; Biancarosa & Snow, 2006; Snow & Biancarosa, 2003). Given these statistics, there is a pressing need

to study the factors that help promote reading development during early adolescence.

Reading comprehension is a complex and dynamic process that encompasses variables related to the reader (e.g., linguistic knowledge), the text (e.g., sophisticated vocabulary), and the activity (e.g., studying with the intent of retaining information for later retrieval), which are all interrelated within a larger sociocultural context (RAND Reading Study Group, 2002). To date, however, research on reading comprehension development has been characterized by an emphasis on student characteristics and/or specific instructional practices (Carnegie Council on Advancing Adolescent Literacy [CCAAL], 2010; National Institute of Child Health and Human Development [NICHD], 2000). From this extensive literature base, it is well known that decoding skills (i.e., print-dependent component) and oral language skills (i.e., vocabulary, listening comprehension; print-independent component) are crucial to reading comprehension—a link that has strong theoretical (Gough & Tunmer, 1986; cf. Ouellette & Beers, 2010) and empirical support (e.g., Droop & Verhoeven, 2003; Hoover & Gough, 1990; Johnston & Kirby, 2006; Joshi & Aaron, 2000; Tunmer & Hoover, 1992; Vellutino, Tunmer, Jaccard, & Chen, 2007). Moreover, though decoding skills continue to explain unique variance in reading comprehension even in adults (e.g., Bell & Perfetti, 1994), oral language skills take on a greater predictive role as children mature (e.g., Catts, Adlof, & Weismer, 2006; Mancilla-Martinez & Lesaux, 2010; Proctor, Carlo, August, & Snow, 2005; Proctor, August, Carlo, & Snow, 2006).

While much is known about the individual skills and competencies related to reading comprehension, less research attention has been paid to better understanding the foundational processes of the classroom environment in which the development of reading

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comprehension skills is taking place. In particular, an understudied yet salient feature of this environment is the language that teachers use when engaging and instructing their students. Given that language is central to reading comprehension skills and therefore integral to academic success, and that the curriculum is largely mediated by language, it is important to better understand how teachers' language relates to students' reading comprehension outcomes. In fact, if exposure to words is key to supporting reading (Perfetti, 2007), then the classroom language environment may be the ideal setting for students who are at risk for reading comprehension difficulties to learn the sophisticated and complex words characteristic of text (CCAAL, 2010; Snow & Uccelli, 2009). We thus sought to investigate whether, in fact, classroom-based linguistic input provided by teachers is related to the development of complex, language-related processes, including reading comprehension.

Such a line of research is particularly important in light of the growing linguistic diversity among the school-age population. In fact, language minority (LM) learners—children whose primary household language is not English—are a fast-growing group enrolling in U.S. schools, and currently make up 25% of the population (Ryan, 2013). In many urban school settings, such as the participating school district studied, this number is much higher (~70%). At the same time, LM learners who begin school with limited English proficiency, on average, perform below their English-only (EO) counterparts on measures of reading comprehension, particularly in the later grades (Kieffer, 2008, 2011; Proctor et al., 2005). For example, of eighth Grade LM learners designated by their schools as English Language Learners, only 3% score at or above proficient in reading comprehension (NCES, 2011). In addition, LM learners drop out of school at rates twice as high as their monolingual EO peers (Ruiz de Velasco & Fix, 2000). However, while the overall, large-scale (often national) data suggests large differences between LM and EO learners on academic indicators, little comparative work has been conducted on the nature of reading development and outcomes in settings where LM and EO students are classmates—often urban school districts with high rates of students growing up in poverty. In addition, little research has been conducted to examine those classroom-level factors that influence the LM population's reading outcomes.

The present study thus aims to advance the field in the direction of empirically describing the linguistic features of adolescents' classroom learning environments across the school year. Our primary objective was to investigate whether and how the features of the classroom language environment are related to the development of reading comprehension beyond the elementary years. Our secondary objective was to investigate the nature of this relationship for two populations, LM learners and their EO peers, given the role that language plays in reading comprehension outcomes and the simultaneous population growth and prevalence of reading difficulties among the former.

Theoretical Framework

The theoretical framework invoked to explain the connection between the classroom language environment and reading development is derived from sociocultural theories (i.e., Bruner, 1978; Vygotsky, 1934/1986) that describe the importance of social interaction in shaping development, with language as the primary

communication tool. In particular, learning occurs as a by-product of a guided activity in which knowledgeable persons organize activities in ways that allow students, who are less knowledgeable, to participate in them at a higher level (i.e., assisted performance) than they otherwise could (i.e., unassisted performance). In the context of the English Language Arts (ELA) classroom, the teacher can provide guided participation in literacy activities by exposing students to the sophisticated vocabulary that may contribute to text comprehension difficulties. This guided participation can be materialized through formal, direct vocabulary instruction and also by providing exposure to this sophisticated vocabulary in daily conversation, and is therefore investigated both ways in the present study. In other words, teachers may play the role of agents of language socialization (Fillmore & Snow, 2000; Hoff, 2006).

As part of their *Lexical Quality Hypothesis*, Perfetti and Hart (2002; see also Perfetti, 1985, 1992, 2007) explain that successful reading comprehension largely depends on the quality of the reader's lexical representations (orthographical, phonological, and syntax-semantics components), which influences the ease with which they can be accessed. The lexical representations are considered high-quality when they not only include well-specified information, but are tightly connected so that the activation of one component (e.g., spelling) leads to the activation of the other components (e.g., pronunciation and meaning). According to this hypothesis, poor readers possess incomplete lexical representations that are accessed inefficiently, resulting in problems with comprehension. Thus, an implication of this model of reading is that exposure to words that create experiences with retrieving their spellings, pronunciations and meanings is a critical foundation to reading comprehension.

Empirical research, largely conducted with EO learners, indeed, shows a link between the quality of classroom discourse (i.e., language use among teachers and students) and the quality of middle-school students' learning (e.g., Cazden, 1988; Mercer, 1995, 2002), in particular, as it relates to literacy (Applebee, Langer, Nystrand, & Gamoran, 2003; Gamoran & Nystrand, 1991; see review in Murphy, Wilkinson, Soter, Hennessey, & Alexander, 2009). This line of research suggests that engaging students in meaningful discussions brings about higher-level thinking, which in turn, helps students internalize the knowledge necessary to independently engage in challenging literacy tasks. Despite the findings that discussion effects are stronger for struggling readers (Murphy et al., 2009), these students have fewer opportunities to engage in high-quality discussions; more discussion time is spent in "advanced" classes than remedial classes intended for less skilled readers (e.g., Applebee et al., 2003). Such findings implicate the teacher as a prominent source of language exposure in underperforming schools.

A separate, but related line of research in the area of classroom-based language input suggests that the classroom teacher's own language use may play a critical role in promoting reading comprehension development. In particular, these studies, which are focused on the frequency and variety of language forms to which students are exposed, show that young children's precursor literacy skills, such as vocabulary (Bowers & Vasilyeva, 2011) and syntax (Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002), are predicted by their teacher's use of vocabulary and syntax. Dickinson and Porche (2011) showed the lasting effects of this early linguistic input; they found that teachers' use of sophisticated vocabulary

in preschool significantly predicted their students' language and literacy skills in fourth grade. To our knowledge, just one study of this kind has focused on the language features of the classroom in relation to the older learner—one that demonstrates a positive relation between teachers' use of sophisticated and complex language and adolescent EO and LM learners' vocabulary skills (Gómez & Lesaux, 2012).

This finding of a positive association between teachers' language and older learners' language skills is particularly significant given that academic vocabulary knowledge has been cited as a weakness for struggling readers—EO and LM learners alike. For example, study findings indicate that LM learners evidence an early plateau in academic vocabulary growth by middle school, even before reaching national norms (Mancilla-Martinez & Lesaux, 2011). A recent study on the nature of reading comprehension difficulties among LM learners and their native English-speaking peers in high-poverty schools showed that vocabulary knowledge was a source of difficulty for both groups (Lesaux & Kieffer, 2010). Still, while there is evidence of similarities in reading outcomes for children from low-income backgrounds, irrespective of language background, questions remain regarding the extent to which the relation between teachers' language use and reading comprehension skills is similar or different for LM learners and their EO counterparts.

The Present Study

In the service of understanding the type of classroom setting that promotes reading comprehension in early adolescent LM and EO learners, we investigated the influence that one element of the classroom language environment—the teacher's language use—has on gains in reading comprehension over the course of an academic year. Specifically, we explored the stability of teachers' language (i.e., use of sophisticated vocabulary, total amount of talk) as well as investigated the vocabulary instruction practices across the school year. To do so, we employed a two-stage analytic procedure to address two methodological issues related to time.

Given that instructional times varied among classrooms and because more talk may be confounded with longer observation times, we analyzed the data using a constant interval of time. In so doing, and because of the size and the scope of the dataset, it was particularly important to arrive at the smallest time interval that would reliably represent teachers' language use. Thus, in the first stage of our analyses, we employed a time-sampling technique, in which we compared the teacher's language use at different time intervals against the entire transcript. In the second stage, using the time interval that proved to be the most reliable in estimating teachers' language use, we generated a description of the variation inherent in teachers' language use across the school year.

These data, describing the variability across classrooms in terms of teachers' language use, were used to examine the relation between ELA teachers' language use and their middle-school students' reading comprehension gains, controlling for other classroom-level effects; in particular, the amount of time spent on direct vocabulary instruction. We also controlled for other factors that have previously been linked to reading development, that is, initial vocabulary skills (e.g., Anderson & Freebody, 1981). Given the evidence that assessments of reading comprehension might measure different skills (see Keenan, Betjemann, & Olson, 2008),

we examined students' reading comprehension skills using two measures, a standardized measure and a state-standards test. The following research questions guided the present study:

- 1) What is the stability of teachers' language use across the school year?
- 2) What is the relation between teachers' language use and early adolescents' reading comprehension and does this differ by language status (EO vs. LM)?

Method

This study uses data from a large-scale experimental evaluation of a vocabulary intervention in 14 urban middle schools (Lesaux, Kieffer, Kelley, & Harris, 2014) selected on the basis of low academic performance and a substantial number of English Language Learners (40% to 90%). The school student size ranged from 700 to 1,100 students, where 45% to 75% of students were of Latino background and between 23 and 100% qualified for free/reduced-price lunch (FRL). As part of the evaluation, 50 mainstream ELA teachers were randomly assigned to either the treatment or control condition (standard practice not altered). This study focuses on the observational data collected in 24¹ control classrooms.

Participants

Teachers. The 24 ELA teachers from the corresponding 24 control classrooms were included in the present study. The teachers had taught, on average, 12.96 years (*range* = 1 to 36; *SD* = 8.84) and all had a state teaching credential (full credential = 21; 5-year preliminary credential = 3). All teachers held a bachelor's degree and 16 held a master's degree or higher. Teachers reported meeting state expectations for instructing English learners by holding a Cross-cultural, Language, and Academic Development (CLAD) certificate or its equivalent. All instruction was provided in English.

Students. Eight hundred and fifty one sixth grade students (mean age at pretest = 11.51; *SD* = 0.42; female = 437; male = 414) for whom we had reading scores served as participants in the study. Consistent with the demographics of the district in which the study was conducted, 252 students were classified as EO and 599 were classified as LM. The EO students self-reported speaking exclusively English at home. LM learners were classified as such if they reported that a language other than English was spoken at home, to any degree. The LM group was made up of 46 different languages. Specifically, 63% of the LM sample reported Spanish as a home language (Spanish-only = 34; Spanish and English = 325; Spanish, English, and another language = 21) and 37% reported speaking another minority language, other than Spanish, at home (English and another language = 194; English and at least two other languages = 15; Only another language = 10). As part of this non-Spanish-speaking LM group, Filipino/Tagalog was the language most spoken by students (36% of responses), followed by Vietnamese (19% of responses).

Thirty-seven percent of the EO group reported being of Caucasian/White ethnicity, 16% African American/Black, 5% Hispanic/

¹ One co-taught control classroom was not included in this study.

Latino, 2% Asian/Asian American, 2% Pacific Islander, and the remaining 36% reported “other.” Forty-five percent of the LM group reported being of Hispanic/Latino ethnicity, followed by 18% Asian/Asian American, 3% Caucasian/White, 3% African American/Black, 3% Pacific Islander; the remaining 28% reported “other.”

Measures

Gates-MacGinitie Reading Test. The Gates-MacGinitie Reading Test (GMRT; MacGinitie, MacGinitie, Maria, & Dreyer, 2002) was used to assess students’ reading comprehension and reading vocabulary. The Reading Comprehension subtest of the GMRT contains written passages, ranging from expository to narrative texts, and related multiple-choice questions intended to measure children’s comprehension abilities. The comprehension questions vary in that they may measure the student’s ability to draw inferences or conclusions or construct a literal understanding of passage. The comprehension tests also measure the ability to determine the meaning of words in an authentic text context. This 48-item subtest contains 11 passages of various lengths regarding a range of subjects. The *Reading Vocabulary* subtest includes 45 items, containing a broad sample of academic vocabulary, and is a measure of global vocabulary. Each subtest yields raw scores, which were then converted to Extended Scale Scores (ESS). The ESS scale is based on the distribution of raw scores from a norming sample of fifth graders where a total score ESS of 500 was the average achievement at the beginning of grade five and 514 at the beginning of grade six. The publisher reports Kuder–Richardson Formula 20 reliability coefficients of .90 to .92 for the sixth grade test, as well as extensive validity evidence.

State Standards ELA Test. As another proxy for students’ reading comprehension skills, we used the ELA subtest of the State-Standards Tests (SSTs) for fifth and sixth grade, which are criterion-referenced tests that measures students’ progress toward achieving state-adopted content standards. The subtest, which consists of a total of 75 questions in multiple-choice format, has reading comprehension at its core, and includes questions related to reading comprehension and word analysis, literary response and analysis, writing strategies and written conventions. Raw scores are converted to scale scores that equate SSTs across grade levels; the scale scores range between 150 and 600 and are interpreted based on the following performance levels: advanced, proficient, basic, below basic, and far below basic. A score of 300 separates basic scores from below basic scores and 350 separates basic scores from proficient scores. The subtest is not vertically equated across grade levels, making it difficult to compare growth from one year to the next. To address this issue, we transformed scaled scores into standardized *z*-scores using the sample mean and standard deviation. Thus, an increase in standardized scores indicates improvement relative to the sample. The state’s reported test–retest reliability is high for 5th (Cronbach’s $\alpha = .94$) and 6th grade (Cronbach’s $\alpha = .93$).

Updated Dale-Chall List-Revised. A revised version of the updated Dale-Chall list (based on Chall & Dale, 1995; see Dickinson & Porche, 2011) was used to determine the sophistication of words. The updated Dale-Chall list contains a list of high-frequency words, specifically, words commonly known by fourth graders, including all inflected forms of the base words found in

the original 3,000-word list. We expanded this list to include any proper names found in our own teacher transcripts. In addition, we revised this list to exclude any words from the Academic Word List (AWL; Coxhead, 2000), which includes words that appear with reasonable frequency in academic texts (e.g., aid, partner, author, chart, route), but excludes the 2,000 most widely used words (i.e., general service words). By excluding AWL words, the revised version of the updated Dale-Chall list contains the most frequently occurring words in English that are not academic words.

Procedure

Live coding of classroom observations. In-person classroom observations took place six times throughout the school year, occurring approximately once a month, from October through April. The observations were conducted for the first 45-min of the ELA period, which ranged from 90 to 120 minutes per day. Coders logged the specific words teachers called attention to and noted whether or not individual words were used as part of direct vocabulary instruction. Coders divided the 45-min observation into 15-min segments and tallied up the total number of segments during which vocabulary instruction, as defined below, took place. We then computed the percentage of time teachers engaged in vocabulary instruction over the total time observed.

Direct vocabulary instruction was coded as such if the teacher used any one of the following seven instructional strategies: a) presenting activities that require knowledge of words such as defining words and making sentences, b) specifically providing an explanation or definition for a word, c) providing examples of how words are used, d) elaborating on definitions by extending students’ responses, e) using contrasting examples to define words, f) presenting opportunities to apply word learning strategies such as in using context clues, and g) asking students to represent words graphically through literal or figurative drawing. This is a modified coding scheme that has been used previously in studies of vocabulary instruction (see Gersten, Dimino, & Jayanthi, 2007) and includes the seven strategies teachers routinely used during pilot testing (Lesaux, Kieffer, Faller, & Kelley, 2010). Specific examples for each strategy are discussed in another manuscript of a larger study focused on describing standard ELA instruction (Lesaux, Kelley, & Harris, 2015) and thus, not detailed here. To establish reliability, 20% of the 15-min live-coder observations were double-coded; interrater reliability was high (exact agreement = 100%; $\kappa = .99$).

Videotaped classroom observations. A random sample of classroom observations was also videotaped. Though videotaping occurred anytime from October to May, each classroom was videotaped at least once (mean $n = 2.54$; range = 1 to 4) during the middle of the school year (January–March). Sixty-one video recordings were generated for this sample of 24 control classrooms, 53 of which were usable (technical difficulties such as low audio, static interference and no playback rendered several videotapes unusable for describing classroom-based language). The videotaping occurred for approximately the first half (i.e., 45 minutes) of the ELA period. ELA instructional times varied among teachers and thus, subsequent recording times also varied (range = 24.90 to 49.95 minutes ($M = 39.02$ minutes), totaling 2,302 minutes of observation).

The videotaped observations were later transcribed using modified conventions of the Child Language Data Exchange System (CHILDES; MacWhinney, 2010). Of note, while the entire videotape from the middle of the school year was transcribed for each teacher ($n = 24$), the remaining videotapes ($n = 29$) were partially transcribed; the comparative analyses detailed below were used to accurately sample a portion of each videotape in order to obtain a reliable estimate of teacher language use. The transcription process of CHILDES involves breaking speech into utterances, which are defined as units of speech bounded by breaths or pauses that indicate a break in the flow of speech. Intonational contour cues, including falling (e.g., declaratives) or rising pitch (e.g., questions), were also used to identify utterances. The specific details of the transcription rules used can be found in a previous manuscript (Gámez & Lesaux, 2012). To establish reliability, a second person transcribed 18% of the transcripts; reliability reached 89%.

For each transcript, we obtained three measures of the language used by teachers: a) number of total utterances, b) overall vocabulary diversity, and c) number of different sophisticated words used (i.e., types). The sheer number of utterances in the transcript served to indicate the total amount of the teacher's talk. The teacher's overall vocabulary diversity was derived using the *vocd-d* program in CLAN (Computerized Language Analysis; MacWhinney, 2010), which computes *D*, a measure of lexical diversity, through random sampling of tokens (i.e., total number of words; see Durán, Malvern, Richards, & Chipere, 2004). Values of *D* generally range from 10 to 100 (McKee, Malvern & Richards, 2000), where low values reflect a lower lexical diversity and high values reflect greater lexical diversity. In using the *vocd-d* program, we avoided the text-length dependency problem inherent in the commonly used Type-Token-Ratio, where the number of different words (i.e., types) is divided by the total number of words (i.e., tokens; see McKee et al., 2000). The number of sophisticated types was computed using the frequency command in the CLAN software, which generates a count of the number of different words appearing in the transcript. To determine the sophistication of a word, each transcript was run against our revised version of the Dale-Chall list (i.e., updated Dale-Chall list excluding AWL words) using a filtering method in CLAN; the words that remained after filtering were deemed sophisticated.

To ground teachers' sophisticated vocabulary usage within the classroom context, each utterance was coded for whether words occurred as part of the teacher's spontaneous speech or as part of direct vocabulary instruction. For this coding, we focused exclusively on AWL words given that these types of high-utility words, found across a variety of domains, have been regarded as words most worth teaching and learning (Stahl & Nagy, 2006). We also limited this coding to the middle-of-the-school-year transcripts as these represent the full observation and thus, provided coders with more context on which to base coding decisions. An example of an explicit focus on the AWL word *contribute* is, "What does it mean to contribute something?" The use of the AWL word *transferred* was coded as occurring as part of spontaneous speech in the following example utterance, "That information gets transferred to this sheet."

Student assessments. The GRMT reading comprehension test was administered in the fall and spring of students' sixth grade year. Form S was used at pretest and form T was used at posttest. The GMRT vocabulary test was only administered at the fall

testing point, as thus, only pretest vocabulary scores are available for analyses. Equated ESS for the reading and vocabulary subtests were used in analyses. The district administered SSTs were given at the end of the students' fifth and sixth grade years.

Results

As noted, given that ELA instructional times varied among teachers and because more talk may be confounded with longer observation times, we focused our efforts on first determining how to accurately sample a portion of each videotape to obtain a reliable estimate of teacher language use. Thus, we first present the results of the comparative analyses of the transcripts through which we found a reliable time-interval that was representative of each teacher's language usage. Then, we present the analyses results of the relation between teachers' language use and students' reading comprehension.

Stage I: Reliably Estimating Teachers' Language Use

Preparation of transcripts. All classrooms were videotaped at least once at the middle of the school year and thus, to increase sample size and statistical power, our time-sampling analyses focused on the 24 transcripts that corresponded to this time period. The baseline for our sampling of time intervals was set at the first 100 utterances of each of these transcripts, consistent with the procedure for calculating Mean Length of Utterance (MLU), a common measure of speech complexity. MLU is calculated by dividing the total number of morphemes by the number of utterances; the rules for calculating MLU set the criteria for selection of utterances at 100 (Brown, 1973). Across the 24 transcripts, the first 100 utterances spanned from 3 to 12 minutes of observation, with a mode of 5 minutes. Thus, our time sampling increased incrementally by 5-min intervals and our final time interval was set at 30 minutes because the minimum length of time for one of the video recordings was 35 minutes (sample mean = 43.21; range = 35 to 49 minutes). Thus, the following time intervals were chosen: 5 minutes, 10 minutes, 15 minutes, 20 minutes, 25 minutes, and 30 minutes. The portions of the transcript that correspond to each time interval were chosen completely at random.

Comparative analysis. To determine the smallest interval of time that would reliably predict teachers' language use in the entire transcript, a series of simple regression analyses was performed. We relied on teachers' # of Utterances and *D* at individual time intervals to predict these measures in the full transcript. As expected, all models significantly predicted teachers' numbers of utterances and *D* in the full transcript (see Table 1), with our 30-min models most accurately representing the data; they explained 88–89% of the variance. The difference between R^2 values (Diff column in Table 1) reflects the "value added" by increasing the time intervals by 5 minutes. For example, the difference between R^2 values for the 15- and 20-min models predicting teachers' # of Utterances in the full transcript was 0.12, indicating that the 20-min model explained 12% more of the variance in teachers' utterances than did the 15-min model. While the 20-min model predicting *D* in the full transcript explained 10% more of the variance than the 15-min model, the 25-min model explained the most variance (value added = 23%). After checking each model's fit using the standardized residuals, there was one case in

Table 1
Comparative Analyses of Teachers' Language Use: Random Time Samples Predicting Full Observation Samples

Time interval	R ²	F(1, 23)	p*	Diff	# of outliers
Utterances					
10-minutes	.61	34.71	.000		0
15-minutes	.70	50.85	.000	0.09	0
20-minutes	.82	96.67	.000	0.12	0
25-minutes	.85	127.08	.000	0.03	0
30-minutes	.88	154.30	.000	0.03	0
Vocabulary diversity					
10-minutes	.39	14.14	.001		0
15-minutes	.38	13.70	.001	-0.01	1
20-minutes	.48	20.21	.000	0.10	0
25-minutes	.71	53.12	.000	0.23	1
30-minutes	.89	171.17	.000	0.16	0

the 25-min model predicting *D* that was close to three times the average leverage (i.e., .250), indicating a possible outlier. Thus, we deemed the 20-min models as the models with the best fit and most value-added; the 20-min speech sample is the lowest time-sample that reliably predicts teachers' language use. Unless otherwise noted, in subsequent analyses of teachers' speech, we used the random 20-min time intervals.

Stage II: Description and Impact of Teachers' Language Use

Sophisticated word usage. To explore whether there was a statistically significant change in teachers' language use across the school year, we estimated growth models using HLM analyses (Raudenbush & Bryk, 2002), with the dependent variables of teachers' total number of utterances and sophisticated vocabulary types. We employed linear growth models to provide a good approximation for potential complex processes because only seven teachers had at least three observations. The unconditional models, based on growth in months since the first observation (*October* = 0 to *May* = 7), revealed no statistically significant increase in the

mean growth rate for total number of utterances (*Coeff* = 8.92, *SE* = 7.158, *T-ratio* = 1.245, *df* = 23, *p* > .05) or decrease in the mean growth rate for number of sophisticated types (*Coeff* = -3.70, *SE* = 1.88, *T-ratio*: -1.968, *df* = 23, *p* = .061). There was also no statistically significant individual variation in growth trajectories for the number of utterances ($\chi^2 = 13.64$, *p* > .05) or sophisticated vocabulary types ($\chi^2 = 13.09$, *p* > .05). There was a similar pattern of results using paired-samples *t* tests to compare the number of sophisticated types between three distinct time-points, the beginning (Oct.–Dec.), middle (Jan.–March) and end (April–May) of the school year. That is, we found no significant difference in the number of sophisticated types between the beginning of the school year (*M* = 76.65; *SD* = 39.91) and middle of the school year (*M* = 59.75; *SD* = 15.85) for teachers with scores at both time points, *t*(9) = 1.393, *p* = .197, CI [-10.55, 44.35]. There was also no significant difference in the number of sophisticated types between the middle of the school year (*M* = 64.63; *SD* = 16.11) and end of the school year (*M* = 46.50; *SD* = 25.20) for teachers with both time points, *t*(7) = 1.752, *p* = .123, CI [-6.34, 42.59].

Given the apparent consistency in teacher's own language use across the school year, we combined the teacher's speech measures across time to yield an average sophisticated type score. As shown in Table 2, across classrooms, teachers varied widely in their use of sophisticated vocabulary types and how much they talked, as measured by their total number of utterances. To describe teachers' language use, we also honed in on the sample of the middle-of-the-school-year transcripts that were fully transcribed. We found that, on average, teachers used 109 (*SD* = 29.59) sophisticated types during approximately the first 45 minutes of the ELA period. Moreover, sophisticated words were primarily used in the context of the teacher's spontaneous speech, not as part of direct vocabulary instruction. For example, we found that teachers used anywhere from 17 to 76 AWL word types (*M* = 32.58, *SD* = 13.56) and 26 to 165 AWL word tokens (*M* = 71.92, *SD* = 35.59) during these 45 min. Of the 376 total AWL types used by teachers at the middle of the school year, 93 word types (or roughly 25%) were used as part of direct vocabulary instruction.

Table 2
Descriptive Statistics

	N	Mean	SD	Min	Max
Level-1 (student) statistics					
Variable name					
GMRT reading comprehension pretest	851	499.16	30.65	411.0	617.0
GMRT reading comprehension posttest	851	501.98	32.38	372.0	610.0
GMRT reading vocabulary pretest	851	499.09	32.46	373.0	653.0
State standards reading pretest	717	341.07	43.86	236.0 (-2.4)	484.0 (3.3)
Level-2 (classroom) statistics					
Across-the-year (20-minute samples)					
Number of total utterances	24	302.32	71.90	128.5	397.0
Number of sophisticated types	24	60.97	21.90	21.00	106.3
Middle-of-the-year (45-minute samples)					
% of Time on vocabulary instruction	24	0.08	0.10	0.0	0.3
Number of total utterances	24	652.63	171.04	395.0	981.0
Number of sophisticated types	24	109.00	29.59	58.0	163.0

Note. Standardized scores in parentheses. GMRT = Gates MacGinitie Reading Test.

Direct vocabulary instruction. Our analyses also focused closely on teachers' vocabulary used as part of direct vocabulary instruction across the school year. To quantify the teacher's instruction, we calculated the percentage of time devoted to direct vocabulary instruction. To reiterate, we divided the 45-min instruction into three 15-min intervals and tallied up the number of intervals teachers taught words using any of the seven strategies noted above (465 total intervals). As Table 2 shows, teachers spent anywhere from 0% to 39% of the total ELA instruction time on direct vocabulary teaching, averaging to approximately 8% ($SD = 0.10$) of class time. As a group, teachers called attention to a total of 1026 unique word types across the six time points. Teachers taught anywhere from 17 to 62 unique word types ($M = 36.50$; $SD = 13.10$) and 18 to 74 word tokens ($M = 42.75$, $SD = 15.89$). The most commonly used strategy to teach these words was Strategy #1 (79% of words taught), which required students' knowledge of words, such as asking students to define words or make sentences. This was followed by Strategy #2, in which teachers provided a definition of or explanation for a word (55% of words taught), and Strategy #3, in which teachers provided examples of words or sentences that demonstrated how words are commonly used (40% of words taught). The remaining four strategies were used less frequently (Strategy #4 = 22%; Strategy #5 = 10%, Strategy #6 = 7%), with teachers asking students to represent words graphically being the least frequently chosen teaching strategy (Strategy #7 = 1%).

The impact of teachers' language use on reading comprehension. As noted, given the nested nature of the data used in the present study, we investigated the relation between teachers' language use and students' gains using HLM analyses (Raudenbush & Bryk, 2002). The use of three-level HLMs allowed us to account not only for the nesting of students (Level 1) within classrooms (Level 2), but also within schools (Level 3). The approach we took in modeling student gains was to include the Grade 6 posttest score as the outcome score and the pretest/Grade 5 score as a Level 1 covariate.

GMRT reading comprehension subtest. A fully unconditional three-level model, where students' GMRT reading comprehension posttest score was the outcome variable, showed significant Level 2 and Level 3 (χ^2 Level 2 = 23.43, $p = .009$; $ICC = .04$; χ^2 Level 3 = 68.80, $p < .001$; $ICC = .15$; Deviance = 8209.56) intercepts, indicating the existence of both a classroom and school effect, respectively. We thus proceeded in building a full three-level model in sequence. In a first model, students' GMRT reading comprehension pretest score was added as a group-centered covariate at Level 1, along with students' language status ($EO = 1$; $LM = 0$) as uncentered. As Table 3a shows, when controlling for the GMRT reading comprehension pretest,² EO students are expected to score higher than the LM learners on the GMRT reading comprehension posttest.

In a final model (see Table 3b), the main classroom-level predictors, teachers' # of Sophisticated Types and % Vocabulary Instruction Time, were added at Level 2 as grand-mean centered to predict students' end-of-year GMRT reading comprehension scores (intercept) and the relationship between language status and end-of-year GMRT reading comprehension scores (slope).³ To control for differences in school composition, the control variable % FRL eligible students was included at Level 3 as grand-mean centered to predict the intercept and language status slope. The

GMRT vocabulary pretest was also added as a group-centered covariate at Level 1 in an attempt to control for differences in initial vocabulary. The intercept and slope for language status was allowed to vary randomly by classroom and by school, but all other effects were fixed as random effects led to convergence problems.⁴

Table 3 shows that when controlling for students' pretest scores and FRL eligibility, teachers' sophisticated types had a significant impact on LM students' end-of-the-year GMRT reading comprehension scores in a positive direction, $d = .251$, as did the time they spent on vocabulary instruction, $d = .167$.⁵ Further, none of the classroom level predictors made a significant impact on the relationship between language status and end-of-the-year reading comprehension scores. Of main interest, these results indicate that for a 1 SD increase in the average teacher's sophisticated type usage (going from about 60 to 80 types in 20 minutes), it is expected that there would be about a 4 extended-scale-point increase in the predicted GMRT reading comprehension posttest score (from a fall to spring grade equivalent) when the pretest is held at the mean.

It is worth noting that the LM-EO gap in GMRT reading scores was no longer significant with the inclusion of the GMRT vocabulary pretest in separate analyses that excluded the classroom- or school-level predictors (Language Status Coeff: 2.535, $SE = 1.90$, T -ratio = 1.320, $p = .233$). These results suggest that vocabulary knowledge is a main contributor to reading comprehension scores. To anticipate, the LM-EO gap in SST scores was only marginally significant with the inclusion of the GMRT vocabulary pretest before including any classroom- or school-level predictors (Language Status Coeff: 0.08, $SE = 0.03$, T -ratio = 25.80, $p = .057$). The difference in the relation between initial vocabulary scores and the two outcome measures is likely due to a difference in the constructs measured; SST scores represent a wider range of skills than reading comprehension alone. It is also worth noting that GMRT reading comprehension posttest scores and Grade 6 ELA scores were highly correlated in a positive direction ($r = .706$, $p <$

² Due to experimental error, the GMRT Reading Comprehension pretest was not administered in two classrooms (n students = 86). We used multiple imputation (MI) to supply values for the missing data, thus, increasing statistical power. Using the NORM (Schafer, 1999) software program, the missing values were predicted five times using existing values from other available measures from the larger dataset that are correlated with scores on the GMRT reading comprehension subtest (i.e., scores from GMRT vocabulary subtest, a researcher-developed vocabulary and morphology task, and a standardized measure of silent word reading). HLM allowed for statistical analyses to be carried out on each imputed data set, producing multiple analysis results.

³ Our decision to model the language status slope was guided by previous research showing the differential impact of teacher speech for LM and EO students' vocabulary performance (e.g., Gámez & Lesaux, 2012; Bowers & Vasilyeva, 2011).

⁴ When we included the GMRC pretest term in the model individually, it did not vary significantly at the classroom level (χ^2 GMRT reading pretest = 7.87, $df = 10$, $p > 0.05$), whereas it did vary significantly at the school level ($\chi^2 = 24.22$, $df = 13$, $p = 0.03$), but was still included as fixed.

⁵ To calculate effect size, we multiplied the main teacher sophisticated types predictor by 2.25 to approximate the first 45-minutes of the ELA period. The resulting SD was multiplied by the main teacher input coefficient and then this number was divided by the SD of the measured posttest score.

Table 3
Hierarchical Linear Models for Students' GMRT Reading Scores

Final estimation of fixed effects	a. Reduced model			b. Full model		
	Coefficient	SE	T-ratio	Coefficient	SE	T-ratio
Intercept	497.830***	3.777	131.815	497.967***	2.397	207.767
% FRL eligible				-0.235*	0.086	-2.746
Sophisticated types				0.165*	0.071	2.322
% Vocabulary instruction				53.700*	23.650	2.271
Language status slope	4.650	2.078	2.237	2.380	2.118	1.124
% FRL eligible				-0.015	0.057	-0.256
Sophisticated types				0.017	0.076	0.227
% Vocabulary instruction				-0.734	14.784	-0.050
GMRT reading comprehension pretest slope	0.591***	0.041	14.396	0.521***	0.057	9.214
GMRT vocabulary pretest slope				0.182***	0.058	43.112
Deviance	7805.58; $\chi^2 = 396.13^{***}$, $df = 12$			7761.50; $\chi^2 = 448.06^{***}$, $df = 13$		
Final estimation of random effects	Variance components					
Classroom-level	48.38; $\chi^2 = 28.24^{**}$			41.08; $\chi^2 = 22.89^{**}$		
School-level	149.20; $\chi^2 = 57.12^{***}$			37.40; $\chi^2 = 28.58^{**}$		

Note. FRL = free/reduced price lunch; GMRT = Gates MacGinitie Reading Test; Classroom-level predictors are based on the random 20-minute speech samples.

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

.001, $n = 717$), suggesting that both measures tap into similar skills.

State standards ELA Test. A separate and unconditional model showed significant variability at the classroom and school levels for Grade 6 SST ELA scores (standardized scores were used; Level 2 $\chi^2 = 24.04$; $df = 9$, $p = .005$; $ICC = .05$; Level 3 $\chi^2 = 69.29$, $p < .001$; $ICC = .18$; Deviance = 1889.07).⁶ We thus proceeded in building a three-level HLM including Grade 5 SST ELA scores as a group-mean covariate at Level 1, along with language status as uncentered. As Table 4a shows, EO students were expected to score higher on the Grade 5 SST ELA measure than LM learners.

A full model (Table 4b) included the main classroom-level predictors, teachers' # of Sophisticated Types and % Vocabulary Instruction Time, at Level 2 as grand-mean centered, while the control variable % FRL eligible students was added as grand-mean centered at Level 3. These terms were modeled to predict the intercepts and language status slopes at the classroom and school levels. The GMRT reading vocabulary pretest was also added as a group-centered covariate at Level 1. The intercepts were allowed to vary randomly, but all other effects were fixed, including the slope for language status, as random effects led to convergence problems. Table 4 shows that when controlling for Grade 5 SST scores, GMRT vocabulary pretest scores and FRL eligibility, teachers' sophisticated types had a significant impact on students' Grade 6 scores in a positive direction, $d = 0.302$. The time spent on vocabulary instruction was also a significant predictor, $d = .185$. None of classroom-level predictors significantly impacted the relationship between language status and end-of-the-year reading comprehension scores.

Discussion

While research on reading comprehension development has primarily focused on students' skills and/or specific instructional practices (CCAAL, 2010; NICHD, 2000), emerging research suggests that the foundational processes of the classroom setting, such

as the teacher's language use, may also play a critical role in student outcomes in this domain (e.g., Dickinson & Porche, 2011). This research on classroom-based linguistic input, however, is characterized by an emphasis on early childhood and on English-only (EO) speakers. Extending this line of research, in the present study, we ask whether teachers' language use is also related to the development of more complex, language-based processes; that is, reading comprehension at later stages of development. We ask this question within the context of classrooms serving large numbers of LM learners, who are considered to be underserved by a number of academic indicators, including achievement (NCES, 2011) and dropout rates (Ruiz de Velasco & Fix, 2000), but for whom there is little data to shed light on the influence of classroom features on their reading outcomes. There has also been little comparative data from studies conducted with LM learners and their EO classmates to better understand the role of second language learning in the developmental relationships of interest.

Our analyses showed that the teacher's language use, sophisticated vocabulary in particular, was a significant source of variability in students' reading comprehension skills, which were gauged by two measures. Despite previous research that finds a differential impact of teachers' vocabulary use on LM learners' and EO speakers' vocabulary scores (e.g., Gámez & Lesaux, 2012; Bowers & Vasilyeva, 2011), our results showed no significant difference in the relation of teachers' sophisticated words and reading comprehension between EO and LM learners. It is important to note, however, that the reading comprehension gap between LM learners and EO students in this urban, relatively low-performing setting, was no longer significant after taking into

⁶ We did not obtain the district administered SST scores for one classroom ($n = 64$) and an additional subset of students across 22 classrooms ($n = 73$). We were prudent in not imputing these particular data because we lacked not only pretest scores (i.e., fifth grade year scores), but also posttest scores (i.e., sixth grade year scores), which serve as our main outcome variable. Listwise deletion of data resulted in a sample size of 717 across 23 classrooms.

Table 4
Hierarchical Linear Models for Students' State Standard ELA Test Scores

Final estimation of fixed effects	a. Reduced model			b. Full model		
	Coefficient	SE	T-ratio	Coefficient	SE	T-ratio
Intercept	-0.128	0.122	-1.047	-0.123	0.096	-1.286
% FRL eligible				-0.006	0.003	-1.679
Sophisticated types				0.006*	0.003	2.186
% Vocabulary instruction				1.849*	0.888	2.084
Language status slope	0.117	0.058	2.018	0.044	0.059	0.735
% FRL eligible				-0.002	0.002	-1.133
Sophisticated types				-0.004	0.003	-1.575
% Vocabulary instruction				-0.015	0.513	-0.028
GMRT reading comprehension pretest slope	0.725***	0.027	26.459	0.636***	0.028	22.565
GMRT vocabulary pretest slope				0.006***	0.001	6.763
Deviance	1303.04; $\chi^2 = 586.03^{***}$, $df = 12$			1249.55; $\chi^2 = 639.52^{***}$, $df = 9$		
Final estimation of random effects	Variance components					
Classroom-level	0.061; $\chi^2 = 58.09^{***}$			0.058; $\chi^2 = 48.82^{***}$		
School-level	0.158; $\chi^2 = 55.81^{***}$			0.080; $\chi^2 = 39.24^{***}$		

Note. SST = State standards test; FRL = free/reduced price lunch; GMRT = Gates-MacGinitie Reading Test; Classroom-level predictors are based on the random 20-minute speech samples.

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

account their vocabulary knowledge, adding support to the importance of vocabulary in reading (e.g., Anderson & Freebody, 1981).

These findings of a positive relation between exposure to teacher's language use and reading development in EO and LM learners is in line with developmental theories of reading that converge on the idea that text comprehension depends largely on the depth of understanding of the language (e.g., vocabulary) used in the text (Simple View of Reading, Hoover & Gough, 1990; see also Anderson & Freebody, 1981; Nagy, Anderson, & Herman, 1987). In particular, the Lexical Quality Hypothesis (Perfetti & Hart, 2002; Perfetti, 1985) describes that the process of reading for understanding requires the reader has access to spelling knowledge, pronunciations, and meanings of words (i.e., the quality of their lexical representations). That is, to develop a deep understanding of words requires varied experiences with words, for example, by way of exposure to teachers' sophisticated vocabulary. Thus, all students, and especially students with reading difficulties, need regular high-quality experiences with words.

In accordance with the implication of such developmental theories, the study findings demonstrate that planned efforts to improve reading comprehension should involve consideration of the need to elevate the language of the classroom where reading instruction is taking place. Of note, teachers' use of sophisticated vocabulary made a significant contribution to students' reading comprehension even when controlling for the percentage of time spent on vocabulary instruction. Discussed in more detail below, this suggests that in addition to targeted instruction in foundational reading skills and reading strategies, there is a need to promote teachers' sophisticated word use day-to-day, in the service of improving students' reading comprehension skills.

In contemplating the role of classroom-based linguistic input in professional development efforts and the research that will further inform such efforts, it is important to note that our analyses also demonstrated that individual teacher's language use was not significantly different across multiple observations, at least on the speech measures obtained in this study. However, we did find substantial variability in teachers' language use across class-

rooms—teachers varied widely in their use of sophisticated vocabulary, but its use was not necessarily part of vocabulary instruction. For example, the majority of AWL words used by teachers, words regarded as the most worth teaching and learning (Stahl & Nagy, 2006), were used as part of the teacher's spontaneous speech but not necessarily part of their direct formal vocabulary instruction, suggesting they may have an orientation about word choice for instruction that differs from the academic and sophisticated vocabulary of focus in this study.

In light of these findings of the stability of individual teacher's language use, together with those of recent studies showing that teachers' language use varies as a function of their own knowledge of language (Corrigan, 2011), it is important to consider, empirically, the ways in which the teacher's language use may be amenable to change. Indeed, there may be several possible strategies and tools to investigate as platforms for doing so; these include working with teachers on rephrasing and recasting features of their own language, and/or designing and implementing classroom-based reading comprehension programs and interventions aimed at increasing sophisticated language use in the classroom, by students and teachers. Any of these approaches is consistent with empirical research that demonstrates a link between more time spent in discussions and students' learning (e.g., Applebee et al., 2003; Gamoran & Nystrand, 1991). Indeed, increasing language complexity within classroom could be a particularly promising avenue for bolstering student reading achievement; a recent meta-analysis of various classroom discussion practices (e.g., Murphy et al., 2009) provides evidence that engaging students in classroom talk, by asking open-ended questions that offer students opportunities to generate extended responses, promotes student text comprehension.

Future Directions and Conclusion

To comprehensively explore the impact of classroom-based linguistic input on student reading comprehension, this line of research should be extended. It remains unknown whether and in what ways older learners benefit from their own classroom language use and

their peers' language use. Importantly, studies have shown peer effects in the development of skills needed for effective participation in classroom discourse, for example, grammar and vocabulary (e.g., Justice, Petscher, Schatschneider, & Mashburn, 2011; Mashburn, Justice, Downer & Pianta, 2009). That is, children in classrooms with peers of higher language ability exhibit greater language growth in comparison to children in classrooms with lower-ability peers, and this effect seems to be strongest for children with low language skills. Such peer effects suggest that students with low language skills may best be served in classrooms with peers who have strong language skills. This is a particularly important implication in light of research that describes the low language skills of the LM student population and their participation in low-performing schools with high numbers of LM peers (e.g., August & Shanahan, 2006). Future research should investigate the optimal language environment for the LM population with respect to degree of heterogeneity of English proficiency levels.

Future research would also serve the field well by conducting more in-depth linguistic analyses of ELA classrooms across the school year. Given the differences in instructional times across the classrooms and the subsequent differences in the speech samples obtained in this study, our analyses relied on a constant interval of 20-min to compare across time, leading to a systematic study of only one third of the daily ELA instruction. In future studies, efforts should be made to include lengthier speech samples collected more frequently across time to further corroborate the stability of teachers' speech. Finally, the correlational nature of the present study does not allow us to make the claim that growth in students' reading skills is causally related to teachers' sophisticated vocabulary. To make a causal claim, subsequent research should also consider the student contributions to the classroom language environment, for example, employing an experimental design that systematically manipulates the frequency of sophisticated vocabulary usage by both groups.

In spite of its methodological limitations, the present study nonetheless makes significant theoretical and practical contributions. Theoretically, our findings are consistent with and also extend the ideas put forth by the sociocognitive and sociocultural theories of cognitive development—ones that delineate the need for older learners to have exposure to environments that will provide them with varied language and literacy experiences with expert persons guiding their learning. Our findings are also consistent with the previous language input literature, which has shown positive associations between early input and young children's language skills (e.g., Bowers & Vasilyeva, 2011) and literacy skills (e.g., Dickinson & Porche, 2011). Practically, our study contributes to the ongoing efforts to increase opportunities to learn for all students, but particularly those academically vulnerable populations, including the large and growing population of LM learners. Specifically, this study provides evidence in support of increasing teachers' use of sophisticated vocabulary in classrooms as a potentially promising way to support the reading comprehension skills of early adolescents.

References

- Alliance for Excellent Education. (2009). *High school dropouts in America* (Fact Sheet). Retrieved from http://www.all4ed.org/files/GraduationRates_FactSheet.pdf
- Anderson, R. C., & Freebody, P. (1981). Vocabulary knowledge. In J. Guthrie (Ed.), *Comprehension and teaching: Research reviews* (pp. 77–117). Newark, DE: International Reading Association.
- Applebee, A. N., Langer, J. A., Nystrand, M., & Gamoran, A. (2003). Discussion-based approaches to developing understanding: Classroom instruction and student performance in middle and high school English. *American Educational Research Journal*, 40, 685–730. <http://dx.doi.org/10.3102/00028312040003685>
- August, D., & Shanahan, T. (2006). *Developing literacy in second-language learners: Report of the National Literacy Panel on language-minority children and youth*. Mahwah, NJ: Erlbaum.
- Bell, L. C., & Perfetti, C. A. (1994). Reading skill: Some adult comparisons. *Journal of Educational Psychology*, 86, 244–255. <http://dx.doi.org/10.1037/0022-0663.86.2.244>
- Biancarosa, G., & Snow, C. E. (2006). *Reading next: A vision for action and research in middle and high school literacy* (A report from Carnegie Corporation of New York). Washington, DC: Alliance for Excellent Education.
- Bowers, E., & Vasilyeva, M. (2011). The relation between teacher input and lexical growth of preschoolers. *Applied Psycholinguistics*, 32, 221–241. <http://dx.doi.org/10.1017/S0142716410000354>
- Brown, R. (1973). *A first language: The early stages*. Cambridge, MA: Harvard University Press. <http://dx.doi.org/10.4159/harvard.9780674732469>
- Bruner, J. (1978). The role of dialogue in language acquisition. In A. Sinclair, R. Jarvella, & W. J. M. Levelt (Eds.), *The child's conception of language* (pp. 241–256). Berlin, Germany: Springer-Verlag.
- Carnegie Council on Advancing Adolescent Literacy. (2010). *Time to act: An agenda for advancing adolescent literacy for college and career success*. New York, NY: Carnegie Corporation of New York.
- Catts, H. W., Adlof, S. M., & Weismer, S. E. (2006). Language deficits in poor comprehenders: A case for the simple view of reading. *Journal of Speech, Language, and Hearing Research*, 49, 278–293. [http://dx.doi.org/10.1044/1092-4388\(2006\)023](http://dx.doi.org/10.1044/1092-4388(2006)023)
- Cazden, C. B. (1988). *Classroom discourse: The language of teaching and learning*. Portsmouth, NH: Heinemann.
- Chall, J., & Dale, E. (1995). *Readability revisited: The new Dale-Chall readability formula*. Cambridge, MA: Brookline Books.
- Corrigan, R. (2011). Effects of pre-service teachers' receptive vocabulary knowledge on their interactive read-alouds with elementary school students. *Reading and Writing*, 24, 749–771. <http://dx.doi.org/10.1007/s11145-009-9223-5>
- Coxhead, A. (2000). A new Academic Word List. *TESOL Quarterly*, 34, 213–238. <http://dx.doi.org/10.2307/3587951>
- Dickinson, D. K., & Porche, M. V. (2011). Relation between language experiences in preschool classrooms and children's kindergarten and fourth-grade language and reading abilities. *Child Development*, 82, 870–886. <http://dx.doi.org/10.1111/j.1467-8624.2011.01576.x>
- Droop, M., & Verhoeven, L. (2003). Language proficiency and reading ability in first- and second-language learners. *Reading Research Quarterly*, 38, 78–103. <http://dx.doi.org/10.1598/RRQ.38.1.4>
- Durán, P., Malvern, D., Richards, B., & Chipere, N. (2004). Developmental trends in lexical diversity. *Applied Linguistics*, 25, 220–242. <http://dx.doi.org/10.1093/applin/25.2.220>
- Fillmore, L. W., & Snow, C. E. (2000). *What teachers need to know about language*. Washington, DC: Center for Applied Linguistics.
- Gámez, P. B., & Lesaux, N. K. (2012). The relation between exposure to sophisticated and complex language and early-adolescent English-Only and Language Minority learners' vocabulary. *Child development*, 83, 1316–1331.
- Gamoran, A., & Nystrand, M. (1991). Background and instructional effects on achievement in eighth-grade English and social studies. *Journal of Research on Adolescence*, 1, 277–300. http://dx.doi.org/10.1207/s15327795jra0103_5
- Gersten, R., Dimino, J., & Jayanthi, M. (2007). Towards the development of a nuanced classroom observational system for studying comprehen-

- sion and vocabulary instruction. In B. Taylor & J. Ysseldyke (Eds.), *Educational interventions for struggling readers* (pp. 381–425). New York, NY: Teachers College Press.
- Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education*, 7, 6–10. <http://dx.doi.org/10.1177/074193258600700104>
- Hoff, E. (2006). How social contexts support and shape language development. *Developmental Review*, 26, 55–88. <http://dx.doi.org/10.1016/j.dr.2005.11.002>
- Hoover, W. A., & Gough, P. B. (1990). The simple view of reading. *Reading and Writing*, 2, 127–160. <http://dx.doi.org/10.1007/BF00401799>
- Huttenlocher, J., Vasilyeva, M., Cymerman, E., & Levine, S. (2002). Language input and child syntax. *Cognitive Psychology*, 45, 337–374. [http://dx.doi.org/10.1016/S0010-0285\(02\)00500-5](http://dx.doi.org/10.1016/S0010-0285(02)00500-5)
- Johnston, T. C., & Kirby, J. R. (2006). The contribution of naming speed to the simple view of reading. *Reading and Writing*, 19, 339–361. <http://dx.doi.org/10.1007/s11145-005-4644-2>
- Joshi, R. M., & Aaron, P. G. (2000). The component model of reading: Simple view of reading made a little more complex. *Reading Psychology*, 21, 85–97. <http://dx.doi.org/10.1080/02702710050084428>
- Justice, L. M., Petscher, Y., Schatschneider, C., & Mashburn, A. (2011). Peer effects in preschool classrooms: Is children's language growth associated with their classmates' skills? *Child Development*, 82, 1768–1777. <http://dx.doi.org/10.1111/j.1467-8624.2011.01665.x>
- Keenan, J. M., Betjemann, R. S., & Olson, R. K. (2008). Reading comprehension tests vary in the skills they assess: Differential dependence on decoding and oral comprehension. *Scientific Studies of Reading*, 12, 281–300. <http://dx.doi.org/10.1080/10888430802132279>
- Kieffer, M. J. (2008). Catching up or falling behind? Initial English proficiency, concentrated poverty, and the reading growth of language minority learners in the United States. *Journal of Educational Psychology*, 100, 851–868. <http://dx.doi.org/10.1037/0022-0663.100.4.851>
- Kieffer, M. J. (2011). Converging trajectories: Reading growth in language minority learners and their classmates, Kindergarten to grade 8. *American Educational Research Journal*, 48, 1187–1225. <http://dx.doi.org/10.3102/0002831211419490>
- Lesaux, N. K., Kelley, J. G., & Harris, J. R. (2015). *Instruction in the urban middle school English language arts classroom: Evidence from a district-wide observational study*. Manuscript in Preparation.
- Lesaux, N. K., & Kieffer, M. J. (2010). Exploring sources of reading comprehension difficulties among language minority learners and their classmates in early adolescence. *American Educational Research Journal*, 47, 596–632. <http://dx.doi.org/10.3102/0002831209355469>
- Lesaux, N. K., Kieffer, M. J., Faller, S. E., & Kelley, J. G. (2010). The effectiveness and ease of implementation of an academic vocabulary intervention for linguistically diverse students in urban middle schools. *Reading Research Quarterly*, 45, 196–228. <http://dx.doi.org/10.1598/RRQ.45.2.3>
- Lesaux, N. K., Kieffer, M. J., Kelley, J. G., & Harris, J. R. (2014). Effects of academic vocabulary instruction for linguistically diverse adolescents evidence from a randomized field trial. *American Educational Research Journal*, 51, 1159–1194.
- MacGinitie, W., MacGinitie, R., Maria, K., & Dreyer, L. (2002). *Gates-MacGinitie Reading Tests* (4th ed.). Itasca, IL: Riverside Publishing Company.
- MacWhinney, B. (2010). *The CHILDES Project: Tools for analyzing talk*. Mahwah, NJ: Erlbaum.
- Mancilla-Martinez, J., & Lesaux, N. K. (2010). Predictors of reading comprehension for struggling readers: The case of Spanish-speaking language minority learners. *Journal of Educational Psychology*, 102, 701–711. <http://dx.doi.org/10.1037/a0019135>
- Mancilla-Martinez, J., & Lesaux, N. K. (2011). The gap between Spanish speakers' word reading and word knowledge: A longitudinal study. *Child Development*, 82, 1544–1560. <http://dx.doi.org/10.1111/j.1467-8624.2011.01633.x>
- Mashburn, A. J., Justice, L. M., Downer, J. T., & Pianta, R. C. (2009). Peer effects on children's language achievement during pre-kindergarten. *Child Development*, 80, 686–702. <http://dx.doi.org/10.1111/j.1467-8624.2009.01291.x>
- McKee, G., Malvern, D., & Richards, B. (2000). Measuring vocabulary diversity using dedicated software. *Literary and Linguistic Computing*, 15, 323–338. <http://dx.doi.org/10.1093/lilc/15.3.323>
- Mercer, N. (1995). *The guided construction of knowledge: Talk amongst teachers and learners*. Towawanda, NY: Multilingual Matters, Ltd.
- Mercer, N. (2002). Diversity and commonality in the analysis of talk. *Journal of the Learning Sciences*, 11, 369–371. <http://dx.doi.org/10.1080/10584062002.9672145>
- Murphy, P. K., Wilkinson, I. A. G., Soter, A. O., Hennessey, M. N., & Alexander, J. F. (2009). Examining the effects of classroom discussion on students' comprehension of text: A meta-analysis. *Journal of Educational Psychology*, 101, 740–764. <http://dx.doi.org/10.1037/a0015576>
- Nagy, W. E., Anderson, R. C., & Herman, P. A. (1987). Learning word meanings from context during normal reading. *American Educational Research Journal*, 24, 237–270. <http://dx.doi.org/10.3102/00028312024002237>
- National Center for Education Statistics. (2011). *National assessment of educational progress 2011: Reading assessments*. Washington, DC: U. S. Department of Education, Institute of Education Sciences.
- National Institute of Child Health and Human Development. (2000). *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (Report of the National Reading Panel; NIH Publication No. 00–4769). Washington, DC: U.S. Government Printing Office.
- Ouellette, G., & Beers, A. (2010). A not-so-simple view of reading: How oral vocabulary and visual-word recognition complicate the story. *Reading and Writing*, 23, 189–208. <http://dx.doi.org/10.1007/s11145-008-9159-1>
- Perfetti, C. A. (1985). *Reading ability*. New York, NY: Oxford University Press.
- Perfetti, C. A. (1992). The representation problem in reading acquisition. In P. B. Gough, L. C. Ehri, & R. Treiman (Eds.), *Reading acquisition* (pp. 145–174). Hillsdale, NJ: Erlbaum.
- Perfetti, C. A. (2007). Reading ability: Lexical quality to comprehension. *Scientific Studies of Reading*, 11, 357–383. <http://dx.doi.org/10.1080/10888430701530730>
- Perfetti, C. A., & Hart, L. (2002). The lexical quality hypothesis. In L. Vehoeven, C. Elbro, & P. Reitsma (Eds.), *Precursors of functional literacy* (pp. 189–213). Philadelphia, PA: John Benjamins.
- Proctor, C. P., August, D., Carlo, M. S., & Snow, C. E. (2006). The intriguing role of Spanish language vocabulary knowledge in predicting English reading comprehension. *Journal of Educational Psychology*, 98, 159–169. <http://dx.doi.org/10.1037/0022-0663.98.1.159>
- Proctor, C. P., Carlo, M., August, D., & Snow, C. (2005). Native Spanish-speaking children reading in English: Toward a model of comprehension. *Journal of Educational Psychology*, 97, 246–256. <http://dx.doi.org/10.1037/0022-0663.97.2.246>
- RAND Reading Study Group. (2002). *Reading for understanding: Toward an R&D program in reading comprehension*. Santa Monica, CA: RAND Corporation.
- Raudenbush, S. W., & Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods* (2nd ed.). Thousand Oaks, CA: Sage Publishing.
- Ruiz de Velasco, J., & Fix, M. (2000). *Overlooked and underserved: Immigrant students in U.S. secondary schools*. Washington, DC: Urban Institute.

- Ryan, C. (2013). Language use in the United States: 2011. *American Community Survey Reports*. Washington, DC: U.S. Department of Commerce, Economics and Statistics Administration, U.S. Census Bureau.
- Schafer, J. L. (1999). NORM users' guide (Version 2). University Park: The Methodology Center, Penn State.
- Snow, C. E., & Biancarosa, G. (2003). *Adolescent literacy and the achievement gap: What do we know and where do we go from here?* New York, NY: Carnegie Corporation of New York.
- Snow, C. E., & Uccelli, P. (2009). The challenge of academic language. In D. R. Olson & N. Torrance (Eds.), *The Cambridge handbook of literacy* (pp. 112–133). Cambridge, UK: Cambridge University Press. <http://dx.doi.org/10.1017/CBO9780511609664.008>
- Stahl, S. A., & Nagy, W. E. (2006). *Teaching word meanings*. Mahwah, NJ: Erlbaum.
- Tunmer, W., & Hoover, W. (1992). Cognitive and linguistic factors in learning to read. In P. Gough, L. Ehri, & R. Treiman (Eds.), *Reading acquisition* (pp. 175–214). Hillsdale, NJ: Erlbaum.
- Vellutino, F. R., Tunmer, W. E., Jaccard, J. J., & Chen, R. (2007). Components of reading ability: Multivariate evidence for a convergent skills model of reading development. *Scientific Studies of Reading*, 11, 3–32. http://dx.doi.org/10.1207/s1532799xssr1101_2
- Vygotsky, L. S. (1986). Thinking and speech. In R. W. Rieber & A. S. Carton (Eds.), *The collected works of L. S. Vygotsky: Vol. 1. Problems of general psychology* (N. Minick, Trans., pp. 39–285). New York, NY: Plenum Press.

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