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The Relation Between Exposure to Sophisticated and Complex Language and Early-Adolescent English-Only and Language Minority Learners' Vocabulary

Perla B. Gámez and Nonie K. Lesaux
Harvard Graduate School of Education

This study investigated the relation between teachers' (N = 22) use of sophisticated and complex language in urban middle-school classrooms and their students' (mean age at pretest = 11.51 years; N = 782; 568 language minority and 247 English only) vocabulary knowledge. Using videotaped classroom observations, teachers' speech was transcribed and coded for their total amount of talk, vocabulary usage, and syntactic complexity. Students' vocabulary skills were assessed at the beginning and end of the school year. Results showed variation in students' vocabulary skills and teachers' language use. Hierarchical linear modeling techniques revealed that after controlling for classroom and school composition and students' beginning-of-the-year scores, students' end-of-the-year vocabulary skills were positively related to teachers' use of sophisticated vocabulary and complex syntax, but not teachers' total amount of talk.

By middle school, the average reader is said to have a reading vocabulary of about 25,000 words (Graves, 2006). To arrive at this figure, children must learn roughly 2,000–3,000 new words a year (Anderson & Nagy, 1992; Anglin, 1993; Stahl & Nagy, 2006), an estimate that varies substantially by individual children. In accounting for individual differences in vocabulary rates at the early stages of development, a growing body of research implicates the variation in the amount and consequent diversity of children's early linguistic experiences at home (see review in Hoff, 2006). In addition, the language children are exposed to in their preschool classrooms, by way of teachers' language input, has been shown to influence their early language development (Bowers & Vasilyeva, 2011; Dickinson & Porche, 2011; Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002). As a result of the positive effects of early language input on language development, recent recommendations for promoting children's language learning include early exposure to language-rich environments (e.g., National Institute of Child Health and Human Development, 2000; National Research Council [NRC], 1998).

However, and in contrast to research on children's early linguistic experiences, to our knowledge there has not yet been a systematic exploration of older children's linguistic input. In turn, the impact of this linguistic input on older children's vocabulary skills remains unknown. The role of input may, indeed, be analogous in younger and older children in that the amount is a critical feature promoting language development. Moreover, as Dickinson and Freiberg (2009) suggest, a focus on the quantity of input is likely insufficient to support language learning at advanced levels of development; they conjecture vocabulary learning in older learners is promoted through exposure to an adequate amount of high-quality linguistic input that mirrors the increasingly sophisticated vocabulary (i.e., rare or low-frequency words) and complex language (i.e., syntactic complexity) they are expected to comprehend. Thus, in the present study, we investigate whether the linguistic input provided for early adolescents in the middle school classroom is a source of variation in their language

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Correspondence concerning this article should be addressed to Perla B. Gámez, Larsen 316, 14 Appian Way, Cambridge, MA 02138. Electronic mail may be sent to perla@uchicago.edu.

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skills, with particular attention to their vocabulary skills.

There are important, unanswered questions about those factors that promote older learners' language skills; of particular interest are questions about promoting the vocabulary development of the fastest-growing segment of the U.S. school population—language minority (LM) learners. LM learners come from homes in which the primary language spoken is not English, and thus at school entry, they are faced with the dual task of acquiring proficiency and developing academic skills in the language of instruction. By early adolescence, those LM learners who enroll in U.S. schools at a young age, rarely need instruction in conversational English. However, many of these learners—along with their native English-only (EO) classmates—lack the academic English vocabulary that is needed to support text comprehension and school success (Lesaux & Kieffer, 2010; Scarcella, 2003). In fact, Mancilla-Martinez and Lesaux's (2010) 7-year longitudinal study of LM learners' language and literacy skills revealed LM learners' generally poor oral language skills in English. When their sample of native Spanish-speaking LM learners—followed since preschool—entered middle school, their vocabulary scores on standardized tests remained 1 *SD* below the mean (third-grade equivalent). LM learners' low oral language skills in English are of particular concern given that oral language skills, such vocabulary and syntax, are predictive of reading comprehension (e.g., Freebody & Anderson, 1983; Miller et al., 2006; Proctor, August, Carlo, & Snow, 2006) and in turn, academic success (National Early Literacy Panel [NELP], 2008; NRC, 1998). Such findings warrant an investigation into the nature of older LM learners' linguistic input—in addition to that of their EO peers—and its potential for supporting language development.

Theoretical Underpinnings

While it has been documented that most classrooms, particularly middle and high school classes, incorporate little, if any, systematic and explicit vocabulary instruction into the curriculum (Durkin, 1979; Lesaux, Kieffer, Faller, & Kelley, 2010; Roser & Juel, 1982; Scott, Jamieson-Noel, & Asselin, 2003; Watts, 1995), the classroom context is nevertheless a potential setting for language development. It has been estimated that children and youth spend at least 15,000 hr of their lives in school (Rutter, Maughan, Mortimore, Ouston, & Smith, 1979). In turn, the oral discourse that takes place in the classroom may lead to exposure to language that is characteristic of the academic register, for example, sophisticated vocabulary and complex syntax (see Schleppegrell, 2003; Snow & Uccelli, 2009). Of note, studies conducted in classrooms with LM learners, as well as native English speakers, find that the teacher consumes approximately two thirds of the total talk time (review in Chaudron, 1988; Flanders, 1970; Legaretta, 1977), thus implicating teachers' language as a significant source of input for EO students and LM learners alike.

The position we take to explain the role of the linguistic environment, specifically teacher input, in older learners' vocabulary learning stems from both classic and recent developmental theories that conceptualize the key role that the adult plays in supporting language development. For example, Bruner (1983) and Vygotsky (1978, 1986) argued that opportunities for learning occur within a social environment in which expert persons (e.g., teachers, parents, peers, etc.) provide a ''scaffold'' that bridges the gap between children's current abilities and what the task requires. Moreover, while there is a set of leading developmental theories that focus on the child's innate contributions to language acquisition (e.g., constraints principles theories; see Markman, 1989), several, including the social-pragmatic theories (Tomasello, 1992), also highlight the role of context and interactions with peers and adults as salient features of the language learning process.

The emergentist coalition model (Hirsh-Pasek, Golinkoff, & Hollich, 2000) attempts to integrate several components from classic and leading theories of language development and suggest that the language learner relies a ''coalition'' of information sources, which shift in importance across different ages. Namely, at the earliest stages of development, language learners may rely heavily on the perceptual features of words that ''stand out'' and grab their attention (e.g., Smith, 2000) but over time shift their reliance onto social and linguistic cues. In a similar vein, Hoff and Naigles (2002) argue that while young children rely on social cues, as they mature, the linguistic cues (i.e., surrounding lexical items) provided by input become the prominent source of information that informs learning of unknown words. In one example, and in support of the syntactic bootstrapping hypothesis (Gleitman, 1990; Landau & Gleitman, 1985), word learners use their knowledge of syntactic structures to bootstrap word meanings.

The Role of Linguistic Input on Language Development

Indeed, many studies have shown that children exploit their offered linguistic input in the service of word learning. However, whereas studies with monolingual children have focused on both the quantity and quality of language input (see Hoff, 2006, for a review), the literature on LM learners has focused primarily on the quantity of language input (see Oller & Pearson, 2002, for a review).

Research with English monolinguals. Longitudinal studies with EO children reveal a positive association between vocabulary growth and the amount and diversity of their caregiver's word usage (Huttenlocher, Haight, Bryk, Seltzer, & Lyons, 1991; Pan, Rowe, Singer, & Snow, 2005). Further, and consistent with the hypothesis that children use their knowledge of syntactic structures to bootstrap word meanings (i.e., Gleitman, 1990; Landau & Gleitman, 1985), exposure to caregivers' syntactically complex utterances (i.e., longer mean length of utterance [MLU]) and diverse sets of vocabulary has been shown to be positively related to young children's vocabulary size (Bornstein, Haynes, & Painter, 1998; Hoff & Naigles, 2002).

The few studies focused on linguistic input in classrooms shows that the variation in the quality of teacher input accounts for differences in school-aged monolinguals' language skills, such as vocabulary and grammar. For instance, Huttenlocher et al. (2002) found that preschoolers exposed to teachers who used more syntactically complex utterances demonstrated greater syntactic skills compared to preschoolers exposed to teachers who used less syntactically complex utterances. In addition, Dickinson and Porche (2011) recently found that monolingual EO children's exposure to sophisticated vocabulary in preschool predicted fourth-grade reading comprehension, with effects mediated by children's kindergarten vocabulary and literacy.

Research with LM learners. The bulk of the literature with LM learners has focused on the significance of the quantity of early input, at home and in school, in language acquisition. In a study with very young LM learners, Pearson and colleagues (Pearson, Fernandez, Lewedeg, & Oller, 1997) found that the relative amount of caregiver speech in each language was positively related to children's vocabulary size in each language. In other words, greater language exposure in a language was related to larger vocabulary size in that language (see also De Houwer, 2007; Oller & Pearson, 2002). In addition, examinations of LM learners' classroom environments have been overwhelmingly focused on broad questions about whether and when to use the native language, and if so, in what proportions (e.g., Ramirez, Pasta, Yuen, Billings, & Ramey, 1991).

Recently, however, Bowers and Vasilyeva (2011) investigated language input in preschool classrooms with several LM learners, focusing on both the quantity and quality of teachers' speech, which was entirely in English. Specifically, vocabulary growth was related to the total number of words (i.e., tokens) produced by the teacher and to the diversity of teachers' speech (i.e., types), for LM children and EO children, respectively. However, in contrast to previous findings, the authors identified a negative association between teachers' structural complexity (i.e., MLU) and their preschool LM learners' vocabulary growth. Therefore, preschool LM learners benefited only from the increased *quantities* of language exposure, whereas their EO counterparts, who were presumably farther along in language development, benefited from the diversity of teachers' vocabulary and syntactic complexity.

Bowers and Vasilyeva's (2011) findings resonate with the notion that differential input as a function of developmental stage is likely needed to promote language learning (Dickinson & Freiberg, 2009). In particular, the negative relation between preschool LM learners' vocabulary and teachers' syntactic complexity is in line with the findings of a study that showed that during very early word learning, children benefited from hearing simplified speech (Furrow, Nelson, & Benedict, 1979). These findings, together with the findings that syntactically complex input benefits slightly more advanced children's vocabulary development (i.e., Hoff & Naigles, 2002), demonstrate that with age and thus, with more exposure to language, children may require speech input that is more complex in nature. Indeed, Hoff (2006) suggests that children filter out input that is too complex and may do so with no negative consequences given that sufficient input is available from which children can benefit. On the other hand, ''children have no way to make up for input that is too simple'' (Hoff, 2006, p. 75). With this in mind, and consistent with the literature outlined above, we hypothesize that the sophistication and complexity of teachers' speech may exert more influence on early adolescents' language skills than the *quantity* of language exposure in general. This relationship may be less clear-cut for LM learners, however, given their limited experience with English (relative to their EO counterparts).

Present Study

We investigated the nature of the input that diverse samples of students (i.e., LM and EO speakers) received in their middle school English Language Arts (ELA) class period (90–120 min) and examined the impact of this input on their vocabulary skills. The ELA curriculum is largely mediated by language (written, spoken) and is thus, an important context in which students can develop language and literacy skills. Specifically, we were interested in whether and how teachers' speech, that is, their use of a diverse set of sophisticated vocabulary and complex syntax, would have a significant impact on early adolescents' vocabulary outcomes. To do so, we analyzed teachers' amount of talk (i.e., quantity) and use of sophisticated vocabulary and syntactic complexity (i.e., quality), from transcriptions of videotaped observations. We also documented the performance of their sixth-grade students (N = 815) on a measure of academic vocabulary during the school year. Of note, the middle school is organized such that students rotate among teachers; thus, we focus this study on just one class period of the students' day.

To investigate the impact of teacher input on students' vocabulary performance, we used hierarchical linear modeling (HLM; Raudenbush & Bryk, 2002), which allowed us to account for the nesting of students within classrooms. HLM also allowed us to control for other classroom and school effects. Specifically, in addition to controlling for differences in classroom composition with respect to the percentage of LM learners, we also controlled for differences in the school composition with respect to the percentage of students deemed eligible for a free or reduced-price lunch (FRL). Previous research has revealed a significant relation between school-level FRL and student outcomes (see Borman & Dowling, 2010; White, 1982). The following three research questions guided this study:

1. What is the variability in middle school teachers' language input, in particular, their total amount of talk, use of sophisticated vocabulary, and complex syntax?
2. What is the variability in early-adolescent LM and EO students' vocabulary skills?
3. What is the impact of teachers' language input on LM and EO students' vocabulary performance?

Method

The data used in the present study were collected as part of a large-scale experimental evaluation of an intervention designed to improve students' language and reading comprehension skills (see Lesaux et al., 2010, for the intervention program description). In order to evaluate the intervention, 50 teachers were randomly assigned to either the treatment or control condition (standard practice not altered). Used for analyses were only the data from the control classrooms, which were all sixth-grade general education, ELA classrooms, with a high numbers of LM learners, where instruction was provided only in English.

Participants

Students. There were 930 sixth graders enrolled in the 24 control classrooms included in the larger intervention. From this larger sample, 782 sixth graders (mean age at pretest = 11.51, SD = .416; female = 398, male = 384) remained in the present study after several students were excluded (due to language impairment, learning disability = 77 children; midyear classroom transfers = 2 children; lacking language status information = 1 child; fewer than two EO students in the classroom = 2 classrooms, totaling 35 students; trilingual status = 33 children). The final sample was drawn from 22 classrooms (44% to 93% LM).

Information on ethnicity and LM status was obtained by a survey administered to all participating students. Thirty-seven percent of the EO group reported being of Caucasian or White ethnicity, 15% African American or Black, 2% Asian orAsian American, 2% Pacific Islander, and the remaining 39% reported Other. Forty-six percent of the LM group reported being of Hispanic or Latino ethnicity, followed by 17% Asian or Asian American, 4% Caucasian or White, 3% African American or Black, 2% Pacific Islander, and the remaining 29% reported Other.

Two hundred and forty-seven students were classified as EO and 535 as LM. Students who reported speaking English exclusively at home were classified as EO, whereas students reporting that a language other than English was spoken at home to any degree were classified as LM. This broad definition for LM learner includes students whose families speak English predominately and those who speak English and another language in equal amounts, as well as those from homes in which another language predominates, consistent

with the definition of this population offered by the National Literacy Panel on Language Minority Children and Youth (August & Shanahan, 2006), as well as much developmental research in this area (e.g., Mancilla-Martinez & Lesaux, 2011; Proctor, Carlo, August, & Snow, 2005; Proctor et al., 2006). Specifically, 63% of the LM sample reported Spanish as a home language ($n_{\text{Spanish as the only language}}$ = 32, $n_{\text{both Spanish and English home language use}}$ = 305). The remaining 37% of the LM group reported speaking another minority language, other than Spanish, at home ($n_{\text{English and another language}}$ = 190, $n_{\text{only another language at home}}$ = 8). As part of this non-Spanish speaking LM group, Filipino or Tagalog was most spoken (35% of responses), followed by Vietnamese (17% of responses). Together, the rest of the LM sample spoke 46 different languages.

Further, for a subset of the LM group (N = 205) scores were available on a state-level English Language Development (ELD) test of English language proficiency. The ELD measures listening or speaking, reading, and writing skills for English language learners (ELLs) and is administered annually to this population, per state regulations. An overall test score, combining the three skill domains, yields five performance levels: beginning, early intermediate, intermediate, early advanced, and advanced. Of the LM children for whom we had ELD scores, approximately half were deemed as having ''early advanced'' or ''advanced'' English language proficiency and the remaining children were deemed as ''intermediate'' or below. Specifically, 5 were categorized as beginning, 20 as early intermediate, 74 as intermediate, 86 as early advanced, and 20 as advanced.

Teachers. Twenty-two general education, ELA teachers, corresponding to the 22 participating sixth-grade classrooms, were included in this study. The mean number of years the teachers had taught was 12.91 (range = 1–36, SD = 9.45). All teachers reported holding a bachelor's degree with 16 also holding a master's degree or higher. They all reported having a state teaching credential; 19 reported having obtained a professional clear credential (full credential) and 3 reported holding a 5-year preliminary credential. Also, all teachers reported meeting state expectations for instructing ELLs; that is, they all completed state training and received a state-level credential that authorizes teachers to provide specialized instruction to students learning English as a second language.

Schools. The participating classrooms were drawn from 14 low-performing middle schools in a large, urban district in the Southwest United States. The middle schools ranged in size from 700 to 1,100 students, with between 23% and 100% of students qualifying for FRL. Therefore, schools with a higher FRL percentage are schools serving a higher proportion of students from low-socioeconomic-status backgrounds.

Measures

Gates-MacGinitie Reading Test Vocabulary. The vocabulary subtest of a standardized multiple-choice test, the Gates-MacGinitie Reading Test (GMRT Vocabulary; MacGinitie, MacGinitie, Maria, Dreyer, & Hughes, 2000), was used to assess students' reading vocabulary and served as a measure of students' word knowledge. The subtest includes 45 items, containing a broad sample of academic vocabulary, and is a measure of global vocabulary, and yields raw scores, which are 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 an ESS of 500 is the average achievement at the beginning of Grade 5 and 525 at the beginning of Grade 6. This widely used standardized measure has high test–retest reliability (Cronbach's α = .92).

Academic Vocabulary assessment. This researcher-developed measure is a 32-item multiple-choice task in which students choose a synonym for a given academic word. The pool of items that appear on the test was derived from the Academic Word List (AWL; Coxhead, 2000). The AWL is an empirically based collection of vocabulary words, compiled from a corpus of 3.5 million words of written academic text by examining the range and frequency of words outside of the first 2,000 most frequently occurring words of English. The list includes 570 word families that account for approximately 10% of the total words in academic texts. The AWL contains high-utility words (e.g., *evidence*, *method*, *integrate*) that appear frequently in texts across many academic disciplines (distinct from discipline-specific words such as *parallelogram*, *antebellum*, *metaphor*) and specifically in sixth-grade content area textbooks (Nair, 2007). The words appear commonly in expository text and occur more rarely in oral conversation and narrative texts. As such, the AWL represents words that are believed to be especially worth teaching and learning across academic disciplines.

From pilot testing, the 32 items with the most evidence of reliability and validity were selected and then used in this study as well as a previous one (Lesaux et al., 2010). The estimate of internal

consistency reliability for this task is good (Cronbach's $\alpha = .85$). A prior study using a version of this task provided convergent and divergent validity evidence (see Lesaux & Kieffer, 2010; Lesaux et al., 2010), including a moderately strong relation with the GMRT Vocabulary measure ($r = .685$, $N = 782$, $p < .001$). Extensive research provides evidence for the validity of this commonly used method for assessing vocabulary (for a review, see Pearson, Hiebert, & Kamil, 2007).

Procedure

Student assessment. The Academic Vocabulary assessment was administered in the fall and spring of the academic year and the GMRT Vocabulary test was administered only in the spring. Trained graduate research assistants with teaching backgrounds administered the student assessments, which were group-administered.

Observations. The ELA period ranged from 90 to 120 min per day across the classrooms. Live in-person classroom observations of the ELA period were conducted at 6 time points during the school year, beginning in late October of the fall semester until April of the spring semester. Although occurring approximately once a month, observation dates were chosen at random. In addition, a random sample of classroom observations was videotaped. Teachers were videotaped at least once for approximately the first 45 min of ELA instruction; the average teacher was taped 2.68 times (range = 1–4). In total, 59 video recordings were produced for this sample of 22 teachers across the school year. However, due to technical difficulties rendering six videotapes unusable, the final videotapes used for analyses were sampled from 53 videotapes.

As noted previously, 22 videotapes from the second and third time points (i.e., middle of the academic year) that corresponded to the 22 participating teachers were included for primary analyses in the present study. These middle-of-the-school-year videotapes ranged from 35 to 48 min ($M = 42.88$ min, $SD = 3.31$), totaling to 1,032 min of observation. The observation time length is in line with previous language input studies that examine individual speech samples of 45–90 min (e.g., Dickinson & Porche, 2011; Hoff, 2003; Huttenlocher et al., 2002). Moreover, the use of the middle-of-the-school-year videotapes is consistent with the methodology used in previous classroom research designed to examine teacher input (e.g., Huttenlocher et al., 2002) and is supported by previous research showing the stability of caregiver speech over time (e.g., Huttenlocher, Vasilyeva, Waterfall, Vevea, & Hedges, 2007). To further confirm the stability of speech in our sample of teachers, we included the videotapes of 8 participating teachers from the first time point (i.e., beginning of year). The beginning-of-the-school-year observations ranged from 22 to 43 min ($M = 39.60$, $SD = 7.32$).

Speech Transcription

Teachers' speech during ELA instruction was transcribed using a modified version of the Child Language Data Exchange System (CHILDES) conventions (MacWhinney, 2007). All intelligible speech was transcribed, including teachers' spontaneous talk as well as read alouds (books or pieces of text). Our decision to include read alouds was guided by the principle that text is a rich source of sophisticated language, and thus, our interest in exploring the exposure to complex language in the ELA classroom extended to teacher read alouds as a source of input. Approximately half of the classrooms included read alouds (mean time = 4.69 min, $SD = 3.44$).

The transcription process involved breaking teachers' speech into utterances. To identify utterances, we relied on pauses (except short word-searching pauses), intonation, and conversational turns that indicated a break in the flow of speech. Given the nature of the dialogue in classrooms, a break in speech flow was also identified by interruptions, either self-interruptions or interruptions caused by another party; interrupted utterances were transcribed on separate lines. Any instances of repetitions, recasts, and reformulations were noted as such, but these cases were not used to determine utterances. Further, transcribers were instructed to not correct for colloquial speech (i.e., use of ''gonna'' instead of ''going to'') or any errors, including, but not limited to, mispronunciations and ungrammatical phrases. Instructions were also given to attempt to disambiguate speech by making multiple revisions of the audio and using context cues available on the videotapes. Transcription reliability was established by having a different transcriber independently transcribe 20% of the transcripts. The transcribers were reliable on 90.7% of the utterances. The percent agreement between the transcriptions was based on accuracy of utterance boundaries and was calculated as the total number of utterances on which they agreed divided by the total number of utterances across the transcripts.

Transcript Analysis

Amount of talk. The Computerized Language Analysis (CLAN) software program (MacWhinney, 2007) was used to calculate the total amount of talk produced at two levels: the word and utterance levels. At the word level, teacher's amount of talk was calculated as the total number of words produced ($Tokens_{Total}$). Total amount of talk at the utterance level was calculated as the sheer number of utterances produced ($Utterances_{Total}$). We also derived the total number of ''other'' utterances, not complex ($Utterances_{Other}$), calculated as the number of complex utterances subtracted from the total number of utterances. It should be noted that filler sounds (e.g., um, hmm, sh) and simple events such as laughing (e.g., ha ha) were excluded from any analyses as were repetitions, recasts, reformulations, and speech marked as unintelligible.

Sophisticated vocabulary. Sophisticated words—rare and low-frequency words—were identified by filtering out high-frequency words from teachers' transcripts. To determine whether a word was high frequency or not, we referred to the updated Dale–Chall list (based on Chall & Dale, 1995) of the 3,000 words known by fourth graders that was recently used in a classroom study by Dickinson and Porche (2011). This updated list includes all linguistic forms of the base words found in the original 3,000-word list, including the following inflected forms: s, es, ies, 's, d, ed, ied, ing, r, est, ier, iest. In addition, the list includes words, slang, and forms of address (e.g., honey, miss) that were common in those classrooms studied by Dickinson and Porche. The updated list of 7,948 words was then expanded to include proper nouns found in our teacher transcripts.

Transcripts were then run against the updated list of high-frequency words using the CLAN program. The words that remained after ''filtering'' were deemed ''sophisticated.'' For each transcript, CLAN derived the number of different sophisticated words ($Types_{Sophisticated}$) and the number of total sophisticated words ($Tokens_{Sophisticated}$). In an effort to control for the differences across teachers in their amount of speech, we also calculated the proportion of sophisticated tokens over the total number of tokens produced ($SophisticatedTokens_{Proportion}$).

Syntactic complexity. In line with previous studies of language input (i.e., Huttenlocher et al., 2002), the coding for syntactic complexity occurred at the utterance level. Each utterance was coded, except for utterances rendered incomplete due to interruptions, either self-interruptions or interruptions caused by another party, because they were not accurate representations of the intended speech. Utterances that served to complete interrupted utterances were coded only at the completed utterance, but the incomplete utterance material was taken into account when assigning a code.

Our main objective was to count the total number of complex utterances per teacher. To do so, each utterance was coded as either a zero-clause, one-clause, or multiclause utterance based on the number of discrete clauses, which were defined as containing a verb and a subject (even if subjects were only implied). According to the rules set forth by Vasilyeva, Waterfull, and Huttenlocher (2008), zero-clause utterances were coded as such if they did not contain any clauses and instead contained just a noun (book), a noun phrase (my book), a prepositional phrase (in my desk), a preposition (down), or an interjection (thank you). Zero-clause utterances also consisted of just a pronoun (you), an adjective (big), an adjective phrase (very good), or a proper noun (Missus Gonzalez, kiddy). One-clause utterances were coded as simple.

Multiclause utterances were generally coded as complex. These included compound-complex utterances, as these types of sentences contained subordinate or dependent clauses (e.g., ''Let's pretend that the freeways were closed and that they couldn't walk up to it'') as well as utterances containing verbs that take sentential complements (i.e., let, want, need, have) when a subject was included (e.g., ''I want you to listen''). However, multiclause utterances that were formed by stringing together a series of clauses with coordinators (i.e., and, but, yet, or, nor, so, for) were not coded as complex utterances and instead, were grouped with simple utterances. In other words, compound or coordinated utterances in which two or more clauses were joined with a coordinating conjunction, and thus, considered grammatical equals (not dependent on each other) were not coded as complex utterances (e.g., ''He is a resident, but he's not a citizen of the United States''). In addition, serial verb constructions (e.g., go get it), modals (e.g., going to do it), emerging modals (e.g., going to, have to), and tags (e.g., isn't it?) were not treated as forming separate clauses.

For each transcript, we calculated the number of complex utterances produced ($Utterances_{Complex}$). In order to control for differences in amount of speech, the number of complex utterances was also transformed into a proportion score, the proportion

of complex utterances over the total number of utterances produced ($Complexity_{proportion}$). Reliability on syntactic complexity coding was established by having a second person independently code 12% of the transcripts. Agreement between the two coders reached 95% (Cohen's Kappa = 87.5, $p < .001$). For a list of variables, see online supporting information Appendix S1.

Results

As a precursor to the HLM analyses, we examined descriptive statistics of students' vocabulary performance, in particular, students' performance on the GMRT Vocabulary subtest given that this measure allows for a comparison against a standard (e.g., percentile rank). In addition, we examined descriptives of teachers' language input, and carried out preliminary analyses on the main teacher variables under study.

Descriptive Statistics

As Table 1 shows, there was substantial variability in raw scores on the AWL measure for both EO and LM groups. A repeated measures analysis of variance (ANOVA) with assessment time (beginning vs. end of the school year) as the within-subject variable and group status (LM vs. EO) as the between-subjects variable revealed a main effect of assessment time, $F(780) = 375.56$, $p < .001$, partial $\eta^2 = .325$, indicating significant improvement on the AWL during the school year. The analysis also revealed a significant main effect of group, $F(780) = 112.54$, $p < .001$, partial $\eta^2 = .126$, indicating that the LM group persisted in scoring lower than the EO group on the AWL at the end of the sixth-grade school year, as they did at the beginning of the year. There was no significant interaction between time and group, $F(780) = .64$, $p = .426$, partial $\eta^2 = .001$.

A one-way ANOVA also revealed that EOs outperformed LM learners on the GMRT Vocabulary subset: extended scaled scores, $F(780) = 116.91$, $p < .001$, partial $\eta^2 = .130$. In fact, on the GMRT Vocabulary measure, approximately half of the LM group scored at or below the test's standard 25th percentile (according to the test's standard) and over 75% scored below the 50th percentile. On the other hand, only 17% of the EO group scored at or below the 25th percentile on the GMRT Vocabulary measure and less than half scored below the 50th percentile.

Table 1
Descriptive Statistics

Variable name	*N*	*M*	*SD*	Min	Max
Student-level statistics (Level 1)					
Language status (English only = 1, Language minority = 0)	782	0.32	0.47	0	1
Academic vocabulary posttest score	782	22.68	5.70	3	32
English only	247	25.48	4.61	8	32
Language minority	535	21.39	5.70	3	32
Academic vocabulary pretest score	782	19.69	5.44	3	30
English only	247	22.32	4.74	8	30
Language minority	535	18.48	5.32	3	30
Gates MacGinitie vocabulary pretest score	782	500.29	32.59	373	653
English only	247	517.59	32.41	423	653
Language minority	535	492.3	29.40	373	590
Classroom-level statistics (Level 2)					
% Free or reduced lunch eligibility	22	56.65	27.79	23	100
% language minority students	22	68.59	13.56	44	93
Total utterances	22	637.23	169.36	395	981
Complex utterances	22	121.55	30.63	74	201
"Other" utterances	22	515.68	152.74	316	804
Total tokens	22	3,834.82	889.30	2,453	5,873
Sophisticated types	22	96.05	25.51	44	140

Table 1 also shows significant variability in teachers' language input. Teachers' $Complexity_{Proportion}$ ranged from .10 to .30 ($M = .20$, $SD = .04$), and $SophisticatedTokens_{Proportion}$ ranged from .04 to .08 ($M = .05$, $SD = .01$), showing the variation in syntactic complexity and sophisticated vocabulary usage across classrooms. Further, Pearson correlations revealed a positive association between teachers' total amount of speech and their quality of speech ($Tokens_{Total}$ and $Types_{Sophisticated}$ $r = .82$, $p < .001$, $N = 22$; $Utterances_{Total}$ and $Utterances_{complex}$, $r = .61$, $p = .003$, $N = 22$), underscoring the need to control for total amount of speech in our analyses. Of note, teachers' input at the beginning of the school year was not significantly different from their input at the middle of the school year for either the word- or utterance-level measures: $Types_{Sophisticated}$, $t(7) = 1.11$, $p = .303$; $Tokens_{Sophisticated}$, $t(7) = -.34$, $p = .745$; $Tokens_{Total}$, $t(7) = -1.34$, $p = .222$; $Complexity_{Proportion}$, $t(7) = .15$, $p = .182$; or $Utterances_{Total}$, $t(7) = 1.96$, $p = .850$. Therefore, in all analyses, only teacher input measures from the middle-of-the-school year transcripts were included.

Preliminary Analysis of Teacher Input Measures: Relation to Control Variables

Our analyses revealed that teachers' speech did not significantly vary alongside the composition of their classrooms or schools—whether they served a higher or lower percentage of LM learners or students eligible for FRL. Specifically, teachers' $SophisticatedTokens_{Proportion}$ was not significantly related to percent LM learners ($r = -.13$, $p = .557$, $N = 22$) or percent FRL eligible students ($r = -.10$, $p = .674$, $N = 22$). Similarly, teachers' $Complexity_{Proportion}$ was not significantly related to percent LM learners ($r = .30$, $p = .177$, $N = 22$) or percent FRL eligible students ($r = -.31$, $p = .169$, $N = 22$). There was also no significant association between class mean pretest scores and teachers' $Complexity_{Proportion}$ ($r = .02$, $p = .914$) or $SophisticatedTokens_{Proportion}$ ($r = .11$, $p = .617$), indicating that students with higher vocabulary knowledge were not necessarily enrolled in classrooms with teachers who used more complex language. It should be noted that all proportions were arcsine transformed, as is standard practice when reporting data as percentages.

The Relation between Teachers' Input on Students' Academic Vocabulary

To answer our primary research question, three-level HLMs were used to account for the nesting of students (Level 1) within classrooms (Level 2) and within schools (Level 3). A fully unconditional model, with students' raw AWL posttest score as the outcome variable at Level 1, showed significant variability in posttests among students within classrooms ($\chi^2 = 22.93$, $p = .004$) and classrooms within schools ($\chi^2 = 78.92$, $p < .001$). Thus, we proceeded to build a sequence of full three-Level models that included several covariates.

At Level 1, we added students' raw AWL pretest scores as a group-centered covariate and students' language status (EO = 1, LM = 0) as an uncentered variable. The intercept was allowed to vary randomly by classroom and by school, but all other effects were fixed; including classroom and school effects as random led to convergence problems. Table 2 shows the intercept of this Level 1 model, representing the predicted posttest vocabulary score for an LM student, when pretest was held at the mean. The language status slope shows the differential between LM and EO students on the posttest, which reveals that after controlling for pretest scores, EO students were expected to score higher than LM students on the vocabulary posttest.

At Level 2, we added our teacher input predictors and the control variable percent LM students to predict students' end-of-year vocabulary scores (intercept) and the relation between language status and end-of-year vocabulary scores (slope). Separate models were used to examine the impact of teachers' input at the word level and utterance level. The word-level model included teachers' $Tokens_{Total}$ along with $Types_{Sophisticated}$, which was modeled instead of $Tokens_{Sophisticated}$ in an effort to reduce colinearity. The utterance-level model included $Utterances_{Other}$ and $Utterances_{Complex}$, not $Utterances_{Total}$ because we were worried about possible endogeneity between our utterance-level predictors resulting in biased estimators. The control variable percent FRL eligible students was added at Level 3 to predict the intercept and language status slope; the slopes due to the effects of classroom-level predictors are assumed to be constant over Level 3 and, thus, fixed. All predictors were grand-mean centered. For a description of a final model, see online supporting information Appendix S2.

Table 2
Unconditional and Level 1 Model for Academic Vocabulary

Final estimation of fixed-effects	Coefficient	*SE*	*T* ratio	*df*	Coefficient	*SE*	*T* ratio	*df*
Intercept, γ_{000}	21.346***	.74	28.77	13	21.054***	.72	29.22	13
Language status slope								
Intercept, γ_{100}	—	—	—	—	0.919**	.30	3.06	779
Academic vocabulary pretest slope								
Intercept, γ_{200}	—	—	—	—	0.630***	.03	22.90	779
Deviance: 4,714.62					Deviance: 4,265.42			
Level 2 variance component: 22.89								
Level 3 variance component: 6.33								

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

Word-Level Models: Sophisticated Words

As Table 3 shows, the results of the word-level model revealed that with all other variables controlled for, teachers' sophisticated types significantly impacted LM learners' end-of-the-year vocabulary scores in a positive direction, whereas total amount of tokens was not a significant factor. In addition, teacher sophisticated types or total tokens did not significantly impact the relation between language status and end-of-year vocabulary skills, indicating that teachers' language did not significantly lessen the gap between EO and LM student scores. To maximize practical interpretability, we interpret our results in terms of effect sizes (Cohen, 1988), $d = .205$ (see Klibanoff, Levine, Huttenlocher, Vasilyeva, & Hedges, 2006). These results indicate that while controlling for all other variables, for a 1 *SD* increase in the average teacher's sophisticated type usage (going from about 99 to 126 types), it is expected that there would be about a 1.17 point increase in the predicted vocabulary posttest score when the pretest is held at the mean. Of note, this model showed a negative association between the variable percent LM students and end-of-the-year vocabulary, indicating lower outcomes for classrooms in which there was a larger percentage of LM students.

Syntactic Complexity Utterance-Level Model

As seen in Table 4, the results of the utterance-level model showed that with all other variables controlled for, teachers' use of complex utterances did not significantly impact LM learners' end-of-the-year vocabulary scores. However, teachers' use of complex utterances did significantly impact the relation between language status and end-of-year vocabulary scores. That is, teachers' use of complex utterances significantly increased the gap between EO and LM student scores, indicating that as teachers' syntactic complexity increased, EO children scored relatively higher than LM learners on our measure of academic vocabulary, $d = .139$. Specifically, while controlling for all other variables, for a 1 *SD* increase in the average teachers' complex utterances (going from about 121 to about 151) it is expected that there would be an increase of approximately 1 point in the mean difference between EO and LM students' posttest scores, when the pretest is held at the mean.

These results led us to believe that perhaps teachers' use of syntactic complexity in English

Table 3
Results of Word-Level Hierarchical Linear Modeling on Academic Vocabulary Knowledge

Final estimation of fixed effects	Coefficient	*SE*	*T* ratio	*df*
Intercept, γ_{000}	21.152***	0.377	56.066	12
% free or reduced lunch eligibility, γ_{001}	−0.022	0.018	−1.206	12
% LM students, γ_{010}	−0.104*	0.037	−2.821	18
Total tokens, γ_{020}	−0.001	0.001	−1.352	18
Sophisticated types, γ_{030}	0.043*	0.020	2.227	18
Language status slope				
Intercept, γ_{100}	1.163**	0.356	3.268	771
% free or reduced lunch eligibility, γ_{101}	0.011	0.015	0.722	771
% LM students, γ_{110}	0.037	0.032	1.175	771
Total tokens, γ_{120}	0.001	0.001	0.965	771
Sophisticated types, γ_{130}	0.002	0.018	0.112	771
Academic vocabulary pretest slope				
Intercept, γ_{200}	0.631***	0.027	22.952	771
Deviance = 4,242.61[a]				
Level 2 variance component: 12.60***				
Level 3 variance component: 0.28				

[a]$\chi^2(10) = 472.02$, $p < .001$.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 4
Results of Utterance-Level Hierarchical Linear Modeling on Academic Vocabulary Knowledge

Final estimation of fixed effects	Coefficient	*SE*	*T* ratio	*df*
Intercept, γ_{000}	21.136***	0.372	56.759	12
% free or reduced lunch eligibility, γ_{001}	−0.032	0.018	−1.719	12
% LM students, γ_{010}	−0.128*	0.037	−3.354	18
''Other'' utterances, γ_{020}	−0.004	0.003	−1.445	18
Complex utterances, γ_{030}	0.019	0.014	1.330	18
Language status slope				
Intercept, γ_{100}	1.151**	0.356	3.236	771
% free or reduced lunch eligibility, γ_{101}	0.001	0.016	0.084	771
% LM students, γ_{110}	0.030	0.032	0.953	771
''Other'' utterances, γ_{120}	−0.002	0.002	−0.790	771
Complex utterances, γ_{130}	0.026*	0.012	2.054	771
Academic vocabulary pretest slope				
Intercept, γ_{200}	0.631***	0.027	22.974	771
Deviance = 4,241.22[a]				
Level 2 variance component: 12.57**				
Level 3 variance component: 0.06				

[a]$\chi^2(10) = 473.406$, $p < .001$.
*$p < .05$. **$p < .01$. ***$p < .001$.

may only benefit children with advanced English language skills. Thus, we ran post hoc analyses, taking a developmental lens, to further investigate whether teachers' syntactic complexity would impact any subset of this group, as a function of their vocabulary knowledge. Ultimately, we treat these analyses as hypothesis generating. In an attempt to equate our LM and EO groups, we more closely examined those children who were deemed as having above ''intermediate'' proficiency levels. In this final sample, we included only those children who scored above the GMRT's standard 25th percentile, given that the majority of EOs scored above this level. Although the number of Level 1 observations decreased dramatically ($N = 40$), we relied on an utterance-level HLM with two levels because this final sample was fairly evenly distributed across 16 classrooms (average $N = 2.5$, $SD = 1.3$), but only 11 schools. To maintain an acceptable ratio between the number of predictors and observations, we relied on $\text{SyntacticComplexity}_{\text{Proportion}}$ as our main predictor, along with the percentage of students receiving FRL as there was no reason to believe that FRL would be different across classrooms within the same school. The results revealed a significant and positive association between the proportion of complex utterances and LM students' vocabulary (coefficient = 41.82, $SE = 14.75$, T ratio = 2.836, $df = 13$, $p = .015$), specifically, LM students who have either ''early advanced'' or ''advanced'' language skills, and score at least above the 25th percentile in reading vocabulary.

It should be noted that by removing the intercept from the utterance-level HLM with two levels, we also modeled separate estimates for four quartile groups (Q1–Q4) of the original LM sample, based on their GMRT Vocabulary extended scale (uncentered dummy variables were included at Level 1, indicating whether the student was in a particular quartile on the GMRT Vocabulary subtest or not). These analyses revealed no significant association between syntactic complexity and LM learners' vocabulary outcomes, solely as a function of students' reading vocabulary performance (e.g., Q4 coefficient = .023, $SE = .091$, T ratio = .256, $df = 18$, $p = .801$). It is important to note, though, that consistent with our previous utterance-level models, we obtained positive coefficients even for the lowest quartile, suggesting that although LM children do not benefit from syntactic complexity, it seems that syntactic complexity would not necessarily have a negative effect on their vocabulary outcomes.

Discussion

A growing body of literature links young children's advanced language and literacy skills to the quantity and quality of their early linguistic experiences (Dickinson & Porche, 2011; Hoff, 2006). However, the nature of the language input provided at later stages of development, and the impact of this input on children's language skills, has been understudied. Our study of the relation between the linguistic input in the middle school classroom and early-adolescents'—EO and LM learners'—language skills suggests that the *quality* of the middle school classroom language environment may indeed play a significant role in the vocabulary learning of early adolescents. Specifically, our results indicated that after controlling for student's initial vocabulary scores and the composition of their schools and classrooms, teachers' use of a diverse set of sophisticated vocabulary (i.e., word types) significantly impacted students' vocabulary knowledge, whereas total amount of talk (i.e., word tokens) did not. In addition, teachers' syntactic complexity differentially benefited EO and LM students' vocabulary skills; EO speakers evidenced greater gains in vocabulary in comparison to LM learners. However, follow-up analyses also showed a positive relation between teachers' syntactic complexity and vocabulary performance for a subset of the LM group. That is, teachers' syntactic complexity significantly impacted those LM learners on the higher end of the vocabulary performance spectrum (i.e., above the 25% percentile) and who had advanced English language proficiency.

Extending previous research conducted in the early childhood setting, these findings suggest that the classroom may be an important setting for supporting and promoting academic vocabulary development through middle school. Therefore, as is recommended for young children (e.g., NICHD, 2000; NRC, 1998), early adolescents should also be exposed to and immersed in high-quality, language-rich environments. In particular, to be developmentally appropriate, these environments should include exposure to sophisticated and complex language that is characteristic of the academic language (see Bailey, Butler, Stevens, & Lord, 2007; Schleppegrell, 2003) children increasingly encounter throughout formal schooling, particularly in text.

The study results implicate the teacher as playing a potentially important role in providing exposure to these features of academic language. Specifically, we found that it is not the *quantity* of teachers' total talk, but the *quality* of the language

the teacher uses that is related to older learners' growth in academic vocabulary. Although we focus on teachers' language use in the present study, due to its dominance in classroom oral discourse (see Cazden, 2001), we do not assume that more teacher talk, and thus less student talk, leads to better student learning. In fact, we conjecture that learning is promoted by an optimal amount of total talk through which the teacher exposes his or her students to sufficiently sophisticated and complex language, and provides opportunities for students to produce such speech. This conjecture is echoed by Dickinson and Freiberg (2009) who suggest that while both the quantity and quality of exposure benefit young children's language development, exposure to a lot of talk may not be sufficient to promote language development in older children, who instead require exposure to language that is sophisticated and complex. Of note, there was a lack of association between teachers' speech characteristics and students' beginning-of-the-year vocabulary scores, which lends some support to the hypothesis that teacher input may be influencing the gains in children's language over the school year.

That teachers' linguistic input significantly contributed to older learners' vocabulary outcomes is in line with developmental theories of word learning, such as those incorporated in the emergentist coalation model (Hirsh-Pasek et al., 2000), which predicts that as children mature, the linguistic cues available in the environment become a prominent source of information about words. Specifically, and congruent with Hoff and Naigles (2002) and the syntactic bootstrapping hypothesis (Gleitman, 1990; Landau & Gleitman, 1985), our finding that teachers' syntactic complexity was positively related to EO children's and a subset of the LM groups' vocabulary outcomes, suggests that exposure to words in a variety of structures may help students learn meanings of new words and also multiple meanings of known words. This result reinforces the notion that word learners rely on linguistic cues in the environment, even well past early childhood.

Beyond information about the general landscape of language learning for the older student, the study findings shed specific light on our understanding of the nature of language development for early-adolescent LM learners. Similar to previous research comparing young LM and EO children's vocabulary performance (i.e., Páez, Tabors, & López, 2007), we found differences between the vocabulary skills of older LM learners and their EO peers, irrespective of teacher talk. That is, at the beginning of the school year, EO students exhibited greater vocabulary performance than LM learners did. By the end of the school year, LM learners continued to score below their EO counterparts.

Most importantly, however, while LM students, as a group, benefited from teachers' increased use of sophisticated types, only the EO group showed increases in their vocabulary as a function of teachers' use of complex utterances. It is worth noting that we consistently found no evidence that syntactic complexity negatively impacted our LM sample (i.e., a null result), which is in contrast to Bowers and Vasilyeva (2011) who found a negative relation between teachers' syntactic complexity and their preschool LM learners' vocabulary gains. Our findings are in line with Hoff (2006) who explains that children may filter out input that is too complex, without negative consequences.

However, our findings also suggest that in order to take advantage of the benefits of complex syntax, children's language skills must be sufficiently advanced. That is, our follow-up analyses suggest that syntactic complexity may only benefit LM learners who bring enough English proficiency to the learning situation. Thus, we hypothesize that those LM learners early in their English proficiency development, and who were not able to exploit such input, had likely not had enough exposure and scaffolding to be familiar with these complex structures. In contrast, English-proficient LM learners' and EO students were sufficiently skilled in English to allow for classroom exposure to complex language to serve as a vehicle for advancing their vocabulary knowledge. Supporting this hypothesis are Pearson's (2002) and Gathercole's (2002) findings that the language skills of their elementary school LM samples were related to the relative levels of input they were receiving in English. In particular, Gathercole found that the differences in the syntactic performance of their LM and EO samples had narrowed by the time the LM learners had had adequate exposure to and thus, scaffolding of English (i.e., by fifth grade).

Our results further revealed that teachers' language use does not necessarily appear to be readily related to external factors, such as their classroom makeup or school population, and that they may not necessarily be differentiating their speech based on student demographics. Instead, our findings suggest that teachers' use of complex language may be something more intrinsic—more of a personal style of speaking. This conjecture is consistent with the findings of a recent study showing that elemen-

tary school teachers' own vocabulary knowledge was related to their classroom language use (Corrigan, 2010). Specifically, Corrigan (2010) found that teachers who evidenced higher vocabulary performance on a receptive vocabulary measure tended to use more sophisticated and diverse language to address their first- and second-grade students than teachers with lower vocabulary skills.

Overall, the finding that teachers' personal speaking styles accounts for variation in linguistic complexity across classrooms has significant implications for the design of effective learning environments for all students, EO and LM alike, but particularly those with underdeveloped language skills. It may mean, for example, that professional development efforts would best exploit and focus on developing teachers' sophisticated and complex language use in deliberate and meaningful ways in the service of promoting students' language development. Research on effective reading aloud, for example, suggests that this may well be an important format through which children can gain exposure to complex language, in part due to the associated dialogue (e.g., Weizman & Snow, 2001). In turn, reading aloud and its related practices may be a mechanism and a platform by which to facilitate teachers' use of complex speech and academic language on a more regular basis.

Other classroom-level initiatives may include efforts to alter the student composition in the classroom. Our result that vocabulary gains were negatively related to the percentage of LM students in the classroom suggests that a lower level of English vocabulary learning takes place in those classrooms with a higher percentage of LM learners. Therefore, efforts to reduce the percent of LM learners per class may likely result in an increase in the level of English learning. That is, a more diverse classroom in which LM learners have ample opportunities for interactions with native English-speakers may result in exposure to high-quality language not only from their teachers but also from interacting verbally with their peers.

Limitations and Conclusion

The present study is not without its limitations, several of which should be considered when making conclusions about its findings and guiding future research in this area. For example, due to the overall protocol for the work, the current study's transcripts were limited in that they only included teacher speech; in fact, not all sampled videotapes included clear student speech. Thus, future research should consider the characteristics of student talk, such as the amount and type of language used, to examine the contributions students make to classroom discourse. Besides analyzing teachers' speech as it relates to the composition of their classrooms and schools at a group level, we were unable to examine teachers' speech as it relates to individual children. It is possible that teachers modified their speech in response to individual students, for example, using either more simplified or complex speech depending on the student's language status. A smaller scale, in-depth study of turn-taking episodes between teacher and student would help shed light onto this issue of whether student characteristics influenced teachers' talk at the individual level.

The time-consuming task of transcribing and coding naturalistic speech limited the current study's focus to be on ELA teachers and their use of sophisticated language and complex syntax. In order to comprehensively explore how the linguistic environment of the classroom can support and promote students' learning, future research should continue to feature detailed linguistic analysis of teachers' talk in other domains and subject areas in the middle school. For example, in light of evidence that oral discourse between students and teachers around text can enhance student's text comprehension (Murphy, Wilkinson, Soter, Hennessey, & Alexander, 2009), an investigation into the language features teachers use to promote classroom discussions, like their specific questions, should be carried out to determine their impact on student's literacy. Moreover, given that previous research with younger children has shown effects of other teacher language characteristics, such as mathematics input on mathematics learning (e.g., Klibanoff et al., 2006; Starkey & Klein, 2008), future research should explore whether these effects extend to the older learner.

Another potential limitation in this study concerns the lack of assessment of LM learners' native language knowledge. It has been suggested that LM learners' low vocabulary performance is a property of bilingual learning that has been coined ''distributed characteristic'' (Oller & Pearson, 2002). Without translation equivalents in a bilingual's two languages, words may be distributed across the two languages, making words available in only one of the languages and not the other (i.e., ''singlet'' vocabulary). Therefore, had we assessed LM learners' conceptual vocabulary, that is, knowledge of concepts across both languages, it is possible that our results would have revealed higher vocabulary

performance among the group. It is worth noting, however, that even without taking into account LM learners' conceptual vocabulary, our study informs us about LM learners' English vocabulary knowledge within an educational system in which English language skills carry great weight (e.g., curriculum and assessment demands).

Overall, the present study offers a unique contribution to the study of academic vocabulary development. As noted, this study advances the knowledge base on those sources of influence of variation in children's growth in vocabulary knowledge in two significant ways: the classroom context and the population studied. Whereas research conducted with preschool children outlines the role of the adult—whether parent or teacher—in the developmental process of language acquisition (e.g., Huttenlocher et al., 2002), we extend these prior findings to early adolescence within the context of the middle school, with a focus on the low-performing urban middle school ELA classroom. Particularly salient to note is that teacher's input was a significant source of variation in spite of the fact that the middle school is organized such that students rotate among teachers; thus, the ELA block in the present study was somewhere between only 90 and 120 min of the overall day, yet nevertheless significantly impacted students' vocabulary outcomes. These results suggest that efforts to increase language skills, such as vocabulary, should be targeted at augmenting and elevating the language of the environment, not only during early-childhood but also through early adolescence.

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Supporting Information

Additional supporting information may be found in the online version of this article:

Appendix S1. Word-Level Predictors.

Appendix S2. Final Hierarchical Linear Model for Academic Vocabulary at the Word Level.

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