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First-Grade Reading Instruction and Reading Growth: Asian Language Minorities and Native-English-Speaking Peers

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The present study explores whether the relation between aspects of first-grade reading instruction and reading growth through eighth grade differed for Asian language minority (LM) children and native-English-speaking (NE) children. The sample consisted of 6,715 NEs and 242 Asian LMs, followed from first to eighth grade. Findings were as follows: (a) The relation between first-grade sounds/letters instruction and reading growth slightly differed for Asian LMs and NEs. For example, Asian LMs who received more sounds/letters instructional emphasis decelerated less through middle grades, and by eighth grade, performed on par with NEs. (b) The relation between first-grade meaning instructional emphasis and reading growth did not differ for the two groups. (c) NEs experienced more deceleration through middle grades. Implications and future directions are discussed.

Keywords: *reading, language minorities, instructional practices*

Approximately 4.6 million students (National Center for Education Statistics, 2016) in the United States are language minority students (LMs) who primarily speak a language other than English at home. Among LMs, Asian students comprise the second largest racial/ethnic group (10.5%; National Center for Education Statistics, 2016) next to Hispanic students (77.7%). Annually, Asians are the largest group of immigrants arriving in the United States (Pew Research Center, 2012).

As reported by the National Assessment of Educational Progress (2017), on average, Asians *as an ethnic group* (regardless of language status) performed as well as their White peers in fourth- and eighth-grade reading. However, how Asian LMs' reading levels compare to those of their native-English-speaking (NE) peers remains unknown. Although early-grade reading instruction is known to benefit NE students' longer term reading growth, little is known about early-grade reading instruction for Asian LMs and its potential relation to English long-term reading growth. The purpose of the current study was to examine the relation between first-grade reading instruction and long-term reading ability growth for Asian LMs and their NE peers.

Effective Reading Instruction for NEs May Inform Effective Reading Instruction for Asian LMs

Implications regarding effective reading instruction for Asian LMs could possibly be drawn from what is known for NEs. In the early grades, key factors for NE reading development are phonological awareness, word recognition strategies, and understanding of words in a meaningful context (Chall, 1967; Ehri & Roberts, 2006; Gough & Tunmer, 1986; Sonnenschein, Stapleton, & Benson, 2010). Three statements about important NE instructional emphases and their relation to reading growth can be asserted from existing research and theory. First, learning about letters and sounds involved in word reading automaticity is critical during the early phases of learning to read (e.g., Ehri, 1999). According to automaticity theory (LaBerge & Samuels, 1974), students can devote a limited amount of attention to any given cognitive task. If students are unable to decode and recognize words quickly, they are unlikely to pay attention to comprehension. On the contrary, as students become more proficient decoders and learn more sight words, they become more fluent word-readers and can spend reduced time and attention on figuring out words.

Second, the purpose of reading is to make meaning of what is read (Xue & Meisels, 2004), but meaning making involves code-breaking knowledge and language comprehension. According to the Simple View of Reading (Gough & Tunmer, 1986), both decoding and language comprehension predict reading comprehension. Difficulties in either decoding or language comprehension will lead to difficulties in reading comprehension. Even if students can make sense of an isolated string of words, if they are unable to decipher key words in a text, they will be unable to comprehend the complete text.

Third, a greater overall amount of kindergarten-and-first-grade reading instruction may positively affect reading growth for kindergarten (Sonnenschein et al., 2010; Xue &

Meisels, 2004) through third graders (Sonnenschein et al., 2010).

Whether the early reading instruction factors that matter for NEs' reading development pertain as well to Asian LMs is unknown. It is possible that certain aspects of early-grade reading instruction are more important for Asian LMs compared with NEs—due to different subgroup languages and culture. Asian LMs might require greater instructional emphasis on sounds and letters. The logic behind such a conjecture is that the sounds of many Asian languages are linguistically distant from English, and in some Asian languages, print representation is nonalphabetic (e.g., Chinese logograms; Koda, 2007; Lesaux, Koda, Siegel, & Shanahan, 2006).

Asian LMs may benefit from added emphasis on meaning construction for cultural exposure reasons. Many young Asian LMs experience cultural differences between home/homeland and U.S. immersion. Texts may embody cultural expression that is unfamiliar to young children. Consequently, instructional emphasis on meaning construction during reading may be particularly important for young Asian LMs.

The foundational instruction that has proven effective with NEs may differ for young Asian LMs' reading growth. One reason for the speculation is that Asian LMs would likely have far less exposure to English sounds and written English than their NE peers who, from birth, are immersed in oral and printed English at home and in their natural environments. Asian LMs may require additional time to expand their oral/aural English language comprehension. As noted in the Simple View of Reading, language comprehension is critical to reading comprehension and reading growth. If Asian LMs require additional time to gain English language comprehension, their initial reading progress might lag, compared with their NE peers', resulting in differential growth patterns across the long run.

Asian LMs' Early Reading Instruction in Relation to Reading Growth

No prior evidence establishes the relation between Asian LMs' early reading instruction and long-term reading growth. However, prior research may inform selected features of that relation. First, minimal evidence suggests that many young Asian LMs quickly acquire grade-level or higher English word reading, but their grasp of vocabulary meaning may not be equal to that of their NE peers. In one study, Cantonese-speaking second-grade children achieved grade-level English decoding but below-grade level oral proficiency (Uchikoshi, 2013). In another study of morphological awareness, on average, fourth-grade Chinese speakers demonstrated awareness of English compound words in parallel with their NE peers (Ramirez, Chen, Geva, & Luo, 2011). However, the same children exhibited lower derivational awareness (Ramirez et al., 2011).

Although these studies do not provide information about the children's early-grade reading instruction, taken together, the results suggest that young Asian LMs may attain word reading levels similar to their NE peers by the end of the primary grades but lag in morphological knowledge. Morphological knowledge is one subskill associated with meaning creation while reading, and challenges in creating meaning may slow children's reading growth (Lesaux, Rupp, & Siegel, 2007). Further investigation might demonstrate that instruction in English sounds and letters may support Asian LMs' reading growth in the same manner that it supports NEs' reading growth. Additional instructional emphasis on meaning while reading could be especially important for Asian LMs' reading growth.

A volume of research informs the shape of NEs' reading trajectories over relatively long spans of time. On average, their trajectories tend to be concave quadratic in nature. This pattern is consistent for NEs from highly varied backgrounds and abilities, ranging from typically developing students to those with reading disabilities to those from low socioeconomic status (SES) families (e.g., Cutuli et al., 2013; Francis, Shaywitz, Stuebing, Shaywitz, & Fletcher, 1996; Kieffer, 2008, 2011, 2012a; Roberts, Mohammed, & Vaughn, 2010) and across five or more grades. The concave quadratic curve displays initial rapid growth in the early elementary grades, followed by decelerated growth.

However, to date, only two studies have examined the nature of Asian LMs' reading trajectories, and those studies have only extended through fifth grade (Li & Yang, 2015; Roberts et al., 2010). In one study, Asian LMs' kindergarten-to-third-grade reading trajectory appeared to grow linearly upward (Li & Yang, 2015). In another study that included comparison to NE speakers, Asian LMs started out higher in reading ability, accelerated similarly, and performed higher than their NE peers through fifth grade (Roberts et al., 2010). Although the two studies provide some initial sense of Asian LMs' reading growth, understanding their reading trajectory through the middle grades is important. Continuation of a linear trajectory through the upper grades cannot be assumed. Early adolescence is known to be a challenging transitional period during which students' identities become further developed, peer relationships take on greater influence, and academic progress can shift (Hinchman, Appleman, & Alvermann, 2017). Understanding whether Asian LMs' reading growth maintains, accelerates, or decelerates pace through the middle grades (and even high school) could inform instructional supports needed.

Summary

In sum, very few researchers have attended to Asian LMs' reading. The extant research provides only minimal insight into their early-grade reading performance or early years reading trajectory. Little is known about their

early-grade reading instruction or its relation to long-term reading growth.

The Present Study

To acknowledge potential differences in reading growth according to regional group (South Asian, East Asian, and Southeast Asian), a preliminary examination was conducted to examine whether within Asian LMs, there were differences in reading growth according to regional group. The preliminary examination was followed by an analysis of whether the relation between aspects of first-grade reading instruction and first-through-eighth-grade reading ability growth differed for Asian LMs, compared with their NE peers. The research question was, What is the relation between first-grade reading instructional emphases/amount and Asian LMs' reading ability growth from first through eighth grade, as compared with that of NEs? Three aspects of first-grade reading instruction were examined: (1) degree to which teachers emphasized sounds and letter–sound relations, (2) degree to which teachers emphasized meaning construction, and (3) overall amount of time teachers spent on reading instruction/activities per day.

Method

Analytic Sample

Data for the study consisted of a subsample of the Early Childhood Longitudinal Study–Kindergarten (ECLS-K) class of 1998–1999 data set (U.S. Department of Education, 2004), a nationally representative multisource, multimethod longitudinal study. The present study sample was comprised 6,715 NEs and 242 Asian LMs.

NEs. Half (50.01%) of the students were male. The mean age in the spring of kindergarten was 74.36 months. White, non-Hispanics were the majority race/ethnicity (69.56%), followed by Black/African American, non-Hispanic (11.35%), and Hispanics (10.01%). Asians accounted for 2.81% of the sample, and 6.27% were all other races/ethnicities. It is likely that the Hispanic and Asian NEs were second- or third-generation Americans, which could explain why their families only spoke, or primarily spoke, English at home.

Asian LMs. Half (50.00%) of the students were male. The mean age in the spring of kindergarten was 74.99 months. Of the 186 Asian LM mothers who provided their country of birth, 180 were immigrants to the United States. The majority (n = 176) of the countries were South Asian (e.g., India), East Asian (e.g., China), or Southeast Asian (e.g., Vietnam) countries. Although the ECLS-K data set did not provide children's home language, maternal home country could be used to aggregate Asian children into regional subgroups. Following Li and Yang's (2015) groupings, Asian countries were categorized into three regions: South Asia, East Asia, and Southeast Asia. South Asian countries included Afghanistan, Bangladesh, India, and Pakistan (n = 22). East Asian countries included Hong Kong, Japan, North Korea, South Korea, Taiwan, and China (n = 50). Southeast Asian countries included Laos, Malaysia, Philippines, Singapore, Thailand, Cambodia, and Vietnam (n = 104).

At kindergarten entry, approximately 75% of the Asian LMs were considered to have sufficiently low oral English ability that they were referred for testing on the ECLS-K Oral Language Development Screener (OLDS; Tourangeau et al., 2001). The OLDS assessed listening comprehension, expressive language, and ability to retell stories. The ECLS-K researchers only provided the reading assessment for Asian LMs who passed the OLDS. Consequently, all Asian LMs in the present study had passed the screener (minimum of 37 out of 60 points) by the spring of kindergarten (cf. Kieffer, 2011). Split-half reliability coefficients for the OLDS were .97 and .96 for fall and spring of kindergarten, respectively (Rock & Pollack, 2002).

Two points about the Asian LM students' oral English levels are noteworthy. First, oral English proficiency ranged widely. Of the children who took the OLDS at kindergarten entry, 114 passed the test (47% of the total Asian LM sample). A full quarter (28%) of the Asian LMs in the present sample (n = 68) did not pass the OLDS until spring of kindergarten. Second, of the students who passed the OLDS at kindergarten entry, only some students in the highest quartile scored well above the cut score. A full 50% of students scored at or just over the cut score—between 37 and 44 out of the possible 60 points. The oral English scores for students who passed the test in the spring of kindergarten mirrored the score ranges of their peers who passed in the fall. Only some of the students in the highest quartile scored well above the cut score, and half of the students scored at or just over the cut score—between 37 and 45 points. Scores for Asian LMs who passed the test tended to aggregate near the cut score. In short, although all Asian LM students in the present study passed the OLDS by the spring of kindergarten, a majority met only a minimum threshold of oral English proficiency. It is unlikely that, as a group, their oral English was up to par with their NE peers.

Asian LMs who did not pass the OLDS by the spring of kindergarten did not statistically significantly differ on mothers' country of birth. However, there was a statistical difference in SES levels, where those who did not pass came from lower SES families. No other comparisons were possible.

Teacher Characteristics. The present study consisted of 2,394 teachers. The ECLS-K data set provided no information about teachers' gender or age. However, 2.45% were Hispanic/Latino and 87.95% were White. (Data were missing for the remaining 9.60% of teachers.) The average

number of years being a schoolteacher was 14.98 (*SD* = 10.07) years, and the average number of years teaching first grade was 8.66 (*SD* = 8.00) years.

Student Variables

Reading Ability. Reading Ability was the ECLS-K theta score for reading ability on the reading assessment at each of the four time points. Theta scores were developed from item response theory procedures to vertically link scores across waves of data. Item response theory used the pattern of responses in the administered items, along with the difficulty, discriminating ability, and "guessability" of each item to put examinees on a point (theta) on a continuous ability scale and establish a common scale. In this way, scores could be compared, regardless of the questions administered. A wide range of reading subskills was measured, including basic skills (e.g., letter recognition, beginning and ending sounds in words, and word recognition), vocabulary, and comprehension. The potential range for Reading Ability was 0 to 212. The test authors concluded that there was strong face validity for the final set of items. Internal consistency reliabilities were .96, .94, .93, and .87, respectively, from first to eighth grade (Tourangeau, Nord, Lê, Pollack, & Atkins-Burnett, 2006). Construct validity was .83, and .84 for third and fifth grades, respectively, for the correlation between Reading Ability and the Kaufman Test of Educational Achievement (Kaufman & Kaufman, 1998) and .83 and .73 for third and fifth grades, respectively, with the Woodcock–McGrew–Werder Mini-Battery of Achievement (Woodcock, McGrew, & Werder, 1994).

Native-English-Speaker Versus Asian LM. Parents completed a 45- to 50-minute interview when students were in the fall of kindergarten. They reported information on students' home language and race/ethnicity. Based on parental responses, the ECLS-K developers classified a student as a NE if he or she primarily spoke English at home according to either (1) no language other than English was regularly spoken in the home or (2) a language other than English was regularly spoken in the home *and* English was the primary language in the home. A student was classified as an Asian LM by the ECLS-K authors according to the following criteria: (1) the student's ethnicity was Asian and (2) a language other than English was regularly spoken in the home *and* English was not also spoken in the home, or a language other than English was regularly spoken in the home *and* English was *not* the primary language in the home. Note that the operational definition of LMs in the present study aligns with that of the National Literacy Panel of Language Minority Children and Youth (August & Shanahan, 2006). English language learners, children who do not yet have sufficient English proficiency to benefit from mainstream English instruction in the absence of substantial support, are a subset of LMs.

Socioeconomic Status. The ECLS-K developers created a standardized composite SES variable for each child from parental questionnaire items. The possible score range was −4.75 to 2.75. Lower scores indicated lower SES levels, and higher scores indicated higher SES levels.

Instructional Emphasis Variables

Teachers rated the frequency with which students in their classroom engaged in various reading activities. Table 1 shows the questionnaire items, along with the response options (Table 1 note) and numerical scores, used to create two of the three reading instructional emphasis variables (described below). Teachers also rated how much time per day children in their classes were usually involved in reading/language arts lessons or activities. Rating choices for "how much time" were 1 (*1–30 minutes a day*), 2 (*31–60 minutes a day*), 3 (*61–90 minutes a day*), and 4 (*more than 90 minutes a day*).

Extent to Which Sounds and Letter–Sound Relations Were Emphasized. Teachers' responses to the questions in Set A (top of Table 1) were averaged to create one summative score for each teacher for the Extent to Which Sounds and Letter–Sound Relations Were Emphasized variable (cf. Sonnenschein et al., 2010; Xue & Meisels, 2004, for a similar composite measure also created from ECLS-K teacher responses). The possible score range was 1 to 6. The present study Cronbach's alpha was .80.

Extent to Which Meaning Construction Was Emphasized. The item responses to the questions in Set B (bottom of Table 1) were averaged to create one summative score for the Extent to Which Meaning Construction Was Emphasized variable (cf. Sonnenschein et al., 2010; Xue & Meisels, 2004, for a similar composite measure also created from the ECLS-K teacher responses). The possible range was 1 to 6. The present study Cronbach's alpha was .75.

Overall Amount of Reading Instruction/Activities. The variable Overall Amount of Daily Reading Instruction/Activities was created from the question on the teacher questionnaire regarding amount of time per day that students engaged in general reading and language arts activities. Each student had one score for Overall Amount of Reading Instruction/Activities for his or her first-grade classroom. The possible range was 1 to 4. The higher the score, the more frequently reading and language arts activities were incorporated in daily classroom activities.

Inclusion Criteria

Each student had to have nonmissing data from the parent interview regarding the primary language spoken in the home; at least one reading ability score in the spring of first,

TABLE 1

Questionnaire Items Contributing to the Current Study Variables Extent to Which Sounds and Letter–Sound Relationships Are Emphasized and the Extent to Which Meaning Construction is Emphasized

Extent to which sounds/letter–sound relationships were emphasized
Set A: How often do children in this class work on each of the following reading and language arts activities?
1. Work on learning the names of the alphabet
2. Practice writing the letters of the alphabet
3. Work on phonics
Set B: For this school year as a whole, please indicate how often each of the following reading and language arts skills is taught in your class(es).
4. Conventions of print (left to right orientation, book holding)
5. Alphabet and letter recognition
6. Matching letters to sounds
7. Writing own name (first and last)
8. Rhyming words and word families
Extent to which meaning construction was emphasized
Set A: How often do children in this class work on each of the following reading and language arts activities?
1. Retell stories
Set B: For this school year as a whole, please indicate how often each of the following reading and language arts skills is taught in your class(es).
2. Identifying the main idea and parts of a story
3. Making predictions based on text
4. Using context cues for comprehension
5. Vocabulary

Note. Set A response options were *never, once a month or less, two or three times a month, once a week, three or four times a week*, and *daily*. Set B response options were *taught at a higher grade level, children should already know, never, once a month or less, two or three times a month, once a week, three or four times a week*, and *daily*

third, fifth, or eighth grades; a sampling weight that corrects for over/undersampling and nonresponse; a score for first-grade sounds and letter–sounds instructional emphasis; a score for first-grade meaning construction instructional emphasis; and a score for first-grade overall amount of reading instruction. The ECLS-K developers excluded some children with disabilities who, based on their IEPs, could not participate in the assessments. All other students were included.

Data Analysis

Two phases of analyses were conducted. First, to determine if there was a need to address the main research question according to subgroups of Asian LMs instead of as a whole, a preliminary examination of Asian LM regional subgroups' reading ability growth was conducted. If there were no regional subgroup differences, then the main analysis could be conducted for Asian LMs as a whole.

Preliminary Examination. An issue rarely addressed in the literature is that Asian languages and cultures may differ from one another in significant ways due to varying immigration history, SES, and cultural capital (Lee, 2011). These differences could affect differential English reading achievement. Studies on Asian LMs tend to focus on East Asian students (Ramirez et al., 2011; Uchikoshi, 2013). However, this focus does not reflect the many Asian subgroups with different ethnic backgrounds (e.g., South Asian and Southeast Asian students; Pew Research Center, 2012). Some precedence exists for separating Asians into South Asian, Southeast Asian, and East Asian regional groups (Li & Yang, 2015). Although Asians are commonly referred to as a homogenous group, there is great diversity in academic achievement among the different Asian regional subgroups (Li & Yang, 2015). For instance, in one study, Southeast Asian children demonstrated lower initial kindergarten reading scores and less growth through third grade, compared with their South Asian and East Asian peers (Li & Yang, 2015). Because a number of home countries were represented in the present study, a preliminary examination of Asian LM regional subgroup reading ability growth was conducted to determine if there was a need to address the main research question according to subgroups instead of as a whole. If there were no regional subgroup differences, then the main analysis could be conducted for Asian LMs as a whole.

A set of two-level hierarchical linear models was conducted. The dependent variable was Reading Ability measured at four time points: first, third, fifth, and eighth grade. The predictor was region. Socioeconomic Status was a control variable to remove potential effects of different levels of

SES on Reading Ability. Repeated measures for Reading Ability across grades (Level 1) were nested within students (Level 2). Region and SES were modeled for students at Level 2. There was no significant effect for Asian region. Therefore, the statistical modeling for the main research question was not accomplished according to Asian region.

Main Analysis. A set of three-level hierarchical linear models was conducted. The dependent variable was Reading Ability measured at four time points: first, third, fifth, and eighth grade. The predictors were Extent to Which Sounds and Letter–Sounds Relations Were Emphasized, Extent to Which Meaning Construction Was Emphasized, Overall Amount of Reading Instruction/Activities, and NE versus Asian LM. Three cross-level interactions were included—each of the three reading instructional emphasis/amount variables separately crossed with NE versus Asian LM. Socioeconomic Status was a control variable. Repeated measures for Reading Ability across grades (Level 1) were nested within students (Level 2), and students were nested within teachers (Level 3). Native-English-speaker versus Asian LM and SES were modeled at Level 2. Reading instructional emphasis/amount variables were modeled at Level 3, which controlled for variation between classrooms. The foci of the research question were the three cross-level interactions.

Procedures Used in Both Sets of Analyses. Raudenbush and Bryk (2002) and Singer and Willet (2003) modeling procedures were followed. The ECLS-K child-specific weight was used to correct for potentially biased estimates of standard errors, and chi-square tests, and clustering effects (cf. Kieffer, 2011; Tourangeau et al., 2001). Reading Ability and reading instructional emphasis/amount variables were standardized, and instantaneous change rate and acceleration/deceleration change rate were centered to allow for comparison of effect coefficients (Xue & Meisels, 2004).

For missing data, multiple imputation was used (Rubin, 2004). To determine if there were outliers, Cook's distance was calculated. No Cook's distance exceeded the criterion used for identifying outliers. Multicollinearity was tested with a tolerance value ($1 - R^2$). No R^2 exceeded the tolerance value used for identifying multicollinear variables.

Results

Preliminary Analyses

Reading Ability. Table 2 shows similar raw score Reading Ability means for the full sample, Asian LM, and NE subgroups at all four time points. Also, variability in Reading Ability at each of the time points was similar across the two language groups. Additionally, although the spread in scores from spring of first grade through spring of eighth grade was similar for the Asian LM and NE subgroups, the lower ends of score ranges were noticeably different. Surprisingly, the lowest-performing NEs' scores were considerably lower than their Asian LM peers'. The largest difference was for the fifth-grade lowest performing NEs, whose mean Reading Ability was 65.22, compared with their counterpart Asian LMs,' whose mean Reading Ability was 103.22.

SES. As shown in Table 2 (bottom), the observed mean SES in the present study full sample was 0.11 (*SD* = 0.76), and the range was from −4.75 to 2.67. That is, the SES range was comparable to the entire possible range of the SES scale (−4.75 to 2.75). The mean SES and standard deviation for the Asian LMs and NEs were nearly identical (0.12 [0.87] and 0.11 [−0.76], respectively), but the range for the NEs was much wider.

Reading Instructional Emphases/Amount. Table 2 shows that on the whole, teachers emphasized sounds and letter–sound relations during instruction one to three to four times a week (*M* = 4.37) and meaning construction slightly more often (*M* = 4.63). On average, first-grade teachers spent more than an hour a day teaching reading (*M* = 3.46).

There was substantial teacher variability in the Extent to Which Sounds and Letter–Sound Relations Were Emphasized (*SD* = 0.95) and moderate variability in the Extent to Which Meaning Construction was Emphasized (*SD* = 0.53). There was also moderate to fairly large variability in Overall Amount of Reading Instruction/Activities (*SD* = 0.73). Unsurprisingly, all teachers provided *some* amount of emphasis on sounds and letter–sound relations (sample minimal score was 1.64) and meaning construction (sample minimal score was 2.72). At minimum, teachers emphasized sounds and letters as well as meaning construction once a month. Last, some teachers accomplished as little as 1 to 30 minutes of reading instruction daily.

On the whole, Asian LMs and NEs received similar amounts of emphasis on sounds and letters (*M* = 4.33 and *M* = 4.37, respectively) and on meaning construction (LM *M* = 4.67, NE *M* = 4.63). Additionally, on average, Asian LMs and NEs received more than an hour of reading instruction per day (*M* = 3.47 and *M* = 3.46, respectively). Variability in Extent to Which Sounds and Letter–Sound Relations Were Emphasized (LM *SD* = 0.95, NE *SD* = 0.95), Extent to Which Meaning Construction Was Emphasized (LM *SD* = 0.54, NE *SD* = 0.53), and Overall Amount of Reading Instruction/Activities (LM *SD* = 0.65, NE *SD* = 0.73) was similar for Asian LMs and NEs, respectively.

As expected, every Asian LM and NE received *some* amount of emphasis on sounds and letters. However, at minimum, some Asian LMs received the particular emphasis more frequently (sample minimal score = 2.09, or approximately once a month) than did some NEs (sample minimal score = 1.64, which signified never to once a month). Also,

TABLE 2

Ranges (n) and Means (SD) for Reading Ability Scores, Reading Instructional Emphases/Amount, and SES by Full Sample, Asian Language Minority (LMs), and Native-English-Speaking (NE) Student Groups and Testing Time Point

End of grade	Full sample		Asian LMs		NE speakers	
	Range (*n*)	*M* (*SD*)	Range (*n*)	*M* (*SD*)	Range (*n*)	*M* (*SD*)
1	26.80 to 184.05 (6,928)	80.25 (23.14)	44.28 to 171.80 (240)	87.11 (26.73)	26.80 to 184.05 (6,688)	80.17 (23.08)
3	51.61 to 200.75 (6,691)	130.53 (27.53)	79.70 to 188.27 (231)	131.52 (22.87)	51.61 to 200.75 (6,460)	130.51 (27.59)
5	65.22 to 203.22 (6,613)	152.59 (25.90)	103.22 to 202.22 (220)	153.89 (23.97)	65.22 to 203.22 (6,393)	152.58 (25.92)
8	86.63 to 208.90 (5,538)	170.64 (27.37)	106.99 to 207.10 (136)	178.74 (23.22)	86.63 to 208.90 (5,402)	170.54 (27.40)
Sound	1.64 to 6.00 (6,957)	4.37 (0.95)	2.09 to 6.00 (292)	4.33 (0.95)	1.64 to 6.00 (6,715)	4.37 (0.95)
Meaning	2.72 to 6.00 (6,957)	4.63 (0.53)	2.83 to 6.00 (292)	4.67 (0.54)	2.72 to 6.00 (6,715)	4.63 (0.53)
Overall	1.00 to 4.00 (6,957)	3.46 (0.73)	2.00 to 4.00 (292)	3.47 (0.65)	1.00 to 4.00 (6,715)	3.46 (0.73)
SES	−4.75 to 2.67 (6,957)	0.11 (0.76)	−1.22 to 2.33 (292)	0.12 (0.87)	−4.75 to 2.67 (6,715)	0.11 (0.76)

Note. SD = standard deviation. Sounds = Extent to Which Sounds and Letter–Sounds Relationships Are Emphasized; Meaning = Extent to Which Meaning Construction is Emphasized; Overall = Overall Amount of Reading Instruction/Activities (1 = 1–30 minutes a day, 2 = 31–60 minutes a day, 3 = 61–90 minutes a day, and 4 = more than 90 minutes a day); SES = socioeconomic status—the average of up to five standardized measures (household income, father's or male guardian's education, mother's or female guardian's education, father's occupational prestige, and mother's occupational prestige); sampling weights were applied. The possible range of Reading Ability was from 0 to 212. Due to missing data, the sample sizes at given time points for the full sample and the total group and subsample participant numbers do not always add up to 6,957, 242, and 6,715, respectively.

each Asian LM and NE received *some* amount of emphasis on meaning construction (sample minimal score = 2.83 and 2.72, respectively). At minimum, Asian LMs and NEs received similar amounts of meaning construction emphasis, between one and three times a month. Additionally, at minimum, some Asian LMs received 31 to 60 minutes of reading instruction every day, while some NEs received as little as 1 to 30 minutes of reading instruction daily.

Correlations. Zero-order correlations among the variables were examined. First, as expected, the four Reading Ability scores (four time points) were strongly positively correlated with one another, with correlations ranging between $r = .57$ and .85. Second, surprisingly, all three reading instructional emphases/amount variables either had no or very weak relations with Reading Ability at each assessment occasion. Correlations between the Extent to Which Sounds and Letter–Sound Relations were Emphasized and Reading Ability scores across the four time points were all significant but very weak and surprisingly, negative, ranging from −.17 to −.13. Correlations between Extent to Which Meaning Construction was Emphasized and Reading Ability across the four time points were either nonsignificant or significant but very weak, ranging from −.05 to .00. Correlations between Overall Amount of Reading Instruction/Activities and Reading Ability at the four time points were all significant but again very weak, though positive, ranging from .03 to .09. Third, relations between NE versus Asian LM and Reading Ability across the aggregate of the four time points were either nonsignificant or significant but very weak, often negative, ranging from −.03 to .00, with NEs demonstrating similar or lower Reading Ability than Asian LMs. Last, as expected, relations between SES and Reading Ability at all time points were significantly moderately positive, with correlations ranging from .37 to .44.

TABLE 3

Results of Fitting the Supplemental Hierarchical Linear Models

Fixed effects		Full conditional, β (*SE*)
Initial status		
Intercept	γ_{00}	−0.860* (0.303)
Region	γ_{01}	−0.065 (0.115)
SES	γ_{02}	0.167 (0.147)
Instantaneous change rate		
Instantaneous rate	γ_{10}	0.055* (0.018)
Region	γ_{11}	–3.984e-3 (0.007)
SES	γ_{12}	−0.007 (0.011)
Acceleration/deceleration rate		
Acceleration/deceleration rate	γ_{20}	−2.441e-4 (1.341e-4)
Region	γ_{21}	−8.200e-6 (4.940e-5)
SES	γ_{22}	−1.440e-7 (7.160e-5)

Were There Differences in Reading Growth According to Asian Region? As shown in Table 3, the three regional Asian LM groups did not differ in initial Reading Ability or growth (intercept, β [*SE*] = −0.065 [0.115], $p > .05$), instantaneous rate of change (β [*SE*] = –3.984e-3 [0.007], $p > .05$), acceleration/deceleration rate of change (β [*SE*] = 8.200e-6 [4.940e-5], $p > .05$). Consequently, the Asian LMs in the present study were treated as one group in the main analyses.

Main Analysis Results

Sources of variances are provided in Table 4.

TABLE 4
Results of Fitting the Final Hierarchical Linear Models

Fixed effects		Full conditional, β (*SE*)
Initial status		
Intercept	γ_{000}	−1.016*** (0.063)
Language status		
NE speakers	γ_{010}	−0.155** (0.059)
SES	γ_{020}	−0.014 (0.191)
Sounds emphasis	γ_{001}	−0.151* (0.064)
Meaning emphasis	γ_{002}	0.074 (0.075)
Overall amount instruction/activities	γ_{003}	−0.013 (0.074)
Language status × Sounds	γ_{011}	0.074 (0.062)
Language status × Meaning	γ_{012}	−0.048 (0.075)
Language status × Overall amount	γ_{013}	0.021 (0.074)
Instantaneous change rate		
Instantaneous rate	γ_{100}	0.044*** (0.002)
Language status		
NE speakers	γ_{110}	0.008*** (0.002)
SES	γ_{120}	0.002 (0.003)
Sounds emphasis	γ_{101}	0.004* (0.002)
Meaning emphasis	γ_{102}	−0.003 (0.002)
Overall amount instruction/activities	γ_{103}	6.903e-4 (0.002)
Language status × Sounds	γ_{111}	−0.004* (0.002)
Language status × Meaning	γ_{112}	0.003 (0.002)
Language status × Overall amount	γ_{113}	−1.288e-4 (0.002)
Acceleration/deceleration rate		
Acceleration/deceleration rate	γ_{200}	−2.291e-4*** (1.63e-5)
Language status		
NE speakers	γ_{210}	−9.750e-5*** (1.600e-5)
SES	γ_{220}	−1.560e-5 (2.83e-5)
Sounds emphasis	γ_{201}	−4.010e-5 (1.670e-5)*
Meaning emphasis	γ_{202}	3.630e-5 (1.960e-5)
Overall amount instruction/activities	γ_{203}	−2.97e-6 (1.52e-5)
Language status × Sounds	γ_{211}	4.340e-5** (1.670e-5)
Language status × Meaning	γ_{212}	−3.260e-5 (1.970e-5)
Language status × Overall amount	γ_{213}	−2.480e-6 (1.530e-5)
Variance components		
Teacher (temporal)		0.253 (0.058)
Teacher (instantaneous change rate)		0.006 (4.903e-4)
Teacher (acceleration/deceleration change rate)		5.090e-5 (5.540e-6)

Note. NE = native English; SES = socioeconomic status; × = interaction.
*$p < .05$. **$p < .01$. ***$p < .001$.

Growth Patterns for Sounds/Letters Emphasis. The relation between the extent to which sounds and letters were emphasized in first-grade reading instruction/activities and children's reading growth *did* differ between language groups. That is, the interaction between NE versus Asian LM and Extent to Which Sounds and Letter–Sound Relations were Emphasized was statistically significantly, albeit weakly, related to Reading Ability for two aspects of reading growth, instantaneous change rate (β [*SE*] = −0.004 [0.002], $p < .05$) and acceleration/deceleration (β [*SE*] = 4.34e-5 [1.670e-5], $p < .01$).

Figure 1a reveals the significant but weak interaction and a slightly complicated relation between degree to which first-grade teachers emphasized sounds/letters in reading instruction and predicted Reading Ability growth. The most obvious impact between NEs and Asian LMs on the relation between sounds/letters emphasis and Reading Ability was in the slight crossover of two growth curves toward eighth

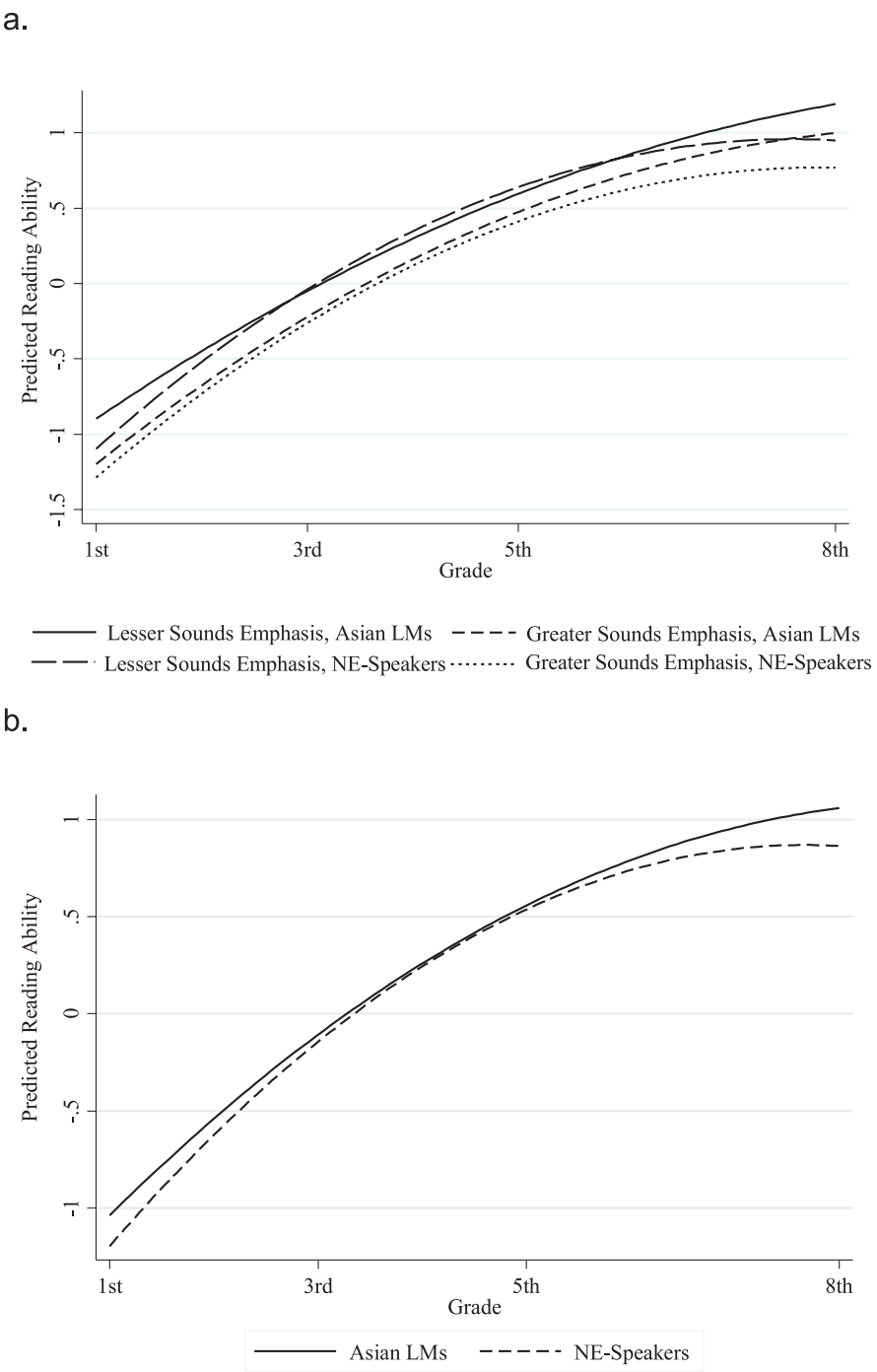

FIGURE 1. *Predicted Reading Ability across grades for Asian language minority (LMs) and native English speakers (NE) with low amount of sounds and letter–sound relationships instructional emphasis and high amount of sounds and letter–sound relationships instructional emphasis, after controlling for socioeconomic status (SES) (a) and predicted reading ability growth across grades for first-grade Asian LMs and NE speakers, after controlling for SES (b). Figure 1a was created by separating students into two groups within NE/Asian LM groups—according to whether they received greater versus lesser first-grade sounds/letters emphases. To ensure distinct groups, the middle group was eliminated.*

grade. The crossover was related to the significant acceleration/deceleration effect and the cumulative effect of the quadratic parameter. Compared with NEs who initially experienced greater sounds/letters emphasis, Asian LMs who also experienced greater sounds/letter emphasis demonstrated a lesser degree of Reading Ability deceleration in

the middle grades. By eighth grade, on average, Asian LMs either performed as well as, or outperformed, both NE subgroups who experienced *either* greater *or* lesser amounts of sounds/letters.

When the whole *patterns* of growth curvature were compared within and across NE/Asian LM subgroups, three main points were noted. (1) The two Asian LM subgroups' trajectories were identical in shape, with those receiving less sounds/letters emphasis outperforming those who received more. (2) The two NE subgroups' trajectories were nearly identical in shape, again, with those receiving less sounds/letters emphasis outperforming those who received more. (3) Regardless of amount of first-grade sounds emphasis, the Asian LM Reading Ability growth pattern *was different* from NEs' growth pattern, in that the *Asian LM pattern exhibited less deceleration through the middle grades.*

Meaning Emphasis and Overall Amount of Reading Instruction/Activities. Neither the relation between first-grade Extent to Which Meaning Construction was Emphasized and reading growth nor the relation between Overall Amount of Reading Instruction/Activities and reading growth differed between language groups.

Extent of Sounds/Letters Emphasis. There was a main effect of Extent to Which Sounds and Letter–Sound Relations were Emphasized on Reading Ability at the intercept (β [*SE*] = −0.151 [0.06], $p < .05$), for instantaneous rate of change (β [*SE*] = 0.004 [0.002], $p < .05$), and acceleration/deceleration rate of change (β [*SE*] = −4.010e-5 [1.670e-5], $p < .01$). *However*, in the face of the significant interactions, only the intercept effect held. On average, in the spring of first grade, for every 1 standard deviation unit increase in sounds/letters emphasis, children's predicted Reading Ability score was lowered by 0.15 of a standard deviation, with all other predictors held constant. In raw score units, for every one unit increase, children who had received greater first-grade emphasis on sounds/letters had predicted end-of-first-grade Reading Ability that was 3.68 points lower than children who had lesser first-grade sounds/letter emphasis. Essentially, a small increase in amount of sounds/letters emphasis throughout first grade was associated with slightly lower predicted Reading Ability at the end of first grade.

Meaning Emphasis and Overall Amount of Reading Instruction/Activities. There were no main effects for Extent to Which Meaning Construction was Emphasized or for Overall Amount of Reading Instruction/Activities on Reading Ability.

NE Versus Asian LM. There was a main effect of NE versus Asian LM on Reading Ability growth for initial status (β [*SE*] = −0.155 [0.059], $p < .001$), instantaneous change rate (β [*SE*] = 0.008 [0.002], $p < .001$), and acceleration/deceleration rate (β [*SE*] = −9.750e-5 [1.60e-5], $p < .001$). However, only the initial status and acceleration/deceleration rate held in the face of the significant interactions, and both were weak effects. Figure 1b shows the NE versus Asian LM main effects. Asian LMs on average outperformed NEs initially on Reading Ability by 0.155 of a standard deviation, holding all other predictors constant. In raw score units, at the end of first grade, NEs' predicted initial Reading Ability score was 3.78 Reading Ability points lower than Asian LMs'.

In Figure 1b, the curvature divergence in NE versus Asian LM trajectories discussed above was also displayed by within-language sound/letter emphasis subgroups in Figure 1a. On average, NEs' Reading Ability decelerated through the middle grades slightly more than Asian LMs', holding all other predictors constant.

Discussion

The present study is the first to explore the potential moderating effect of first-grade instructional emphases on reading growth for NEs versus Asian LMs. It is also the first large-scale study to examine Asian LM reading growth through the middle grades. The following sections outline the conclusions and salient findings.

Sounds/Letters Emphasis in Relation to Reading Ability Growth

Added sounds/letters instructional emphasis exponentially and positively affected a subgroup of initially lower performing Asian LMs' long-term reading ability growth more than a subgroup of initially lower performing NEs'. This finding is corroborated by research demonstrating that added sounds/letter emphasis was particularly beneficial to lower performing NE children's reading development more than their higher performing peers' through the early grades (e.g., Connor, Morrison, & Katch, 2004; Foorman, Francis, Fletcher, & Schatscheider, 1998; Sonnenschein et al., 2010; Xue & Meisels, 2004). Minimal contrary evidence in one study suggested no such added benefit for lower performing NEs (Vadasy & Sanders, 2012).

However, no prior research informs why the added letters/sounds effect would be stronger for low-performing *Asian LMs*. A consideration is Asian LMs' oral English level at first-grade entry. In the present study, although Asian LMs had passed an oral English assessment, there was ample evidence that on the whole, their English levels were likely not on par with NEs. If the lowest performing NEs had already developed adequate sounds/letter knowledge prior to, or early in, first grade, then emphasizing it in first grade may have been unnecessary, leading to later negative effects on reading growth. However, for Asian LMs with comparatively lower oral English levels, greater

emphasis on sounds/letters may have advantaged their reading development and contributed to the comparative long-term reading ability boost.

It is noteworthy that the two groups of (practically speaking) initially lowest readers at the end of first grade had received greater instructional emphasis on sounds/letters during first grade than did the two groups of initially highest performers. Teachers may have considered children's reading levels and delivered instruction they believed was most needed for progress, *regardless of* whether students were *NEs or Asian LMs*. Teachers may have noted children's low reading levels and believed that more sounds/letters emphasis was developmentally appropriate instruction. Similarly, teachers may have believed that initially higher performing readers did not need as much emphasis on sounds/letters.

Meaning Emphasis in Relation to Reading Ability Growth

Degree of first-grade emphasis on meaning construction was unrelated to students' reading growth nor was that relation different for NEs versus Asian LMs. The results might be interpreted in several ways. Some emphasis on meaning construction during instruction is theoretically important because meaning creation and understanding is the point of reading. However, the main work of learning to read is "code breaking" (e.g., Adams, 1990; Gentry, 2006). In addition, early-grade texts tend to be designed for easy comprehension, with texts supporting understanding through pictures, vocabulary familiar in oral language, short sentences, and content familiar to young children (Fitzgerald, Elmore, Relyea-Kim, Hiebert, & Stenner, 2016). In other words, early-grade instruction and texts may have contributed to a lack of relation between instructional meaning emphasis and children's reading growth.

Indeed, greater emphasis on meaning instruction may be more critical later in students' reading trajectories (e.g., D'Agostino & Rodgers, 2017; Storch & Whitehurst, 2002). In several early-grade studies, NEs' reading growth benefitted from meaning instruction emphasis only when students had higher, rather than lower, initial reading ability levels (e.g., Connor et al., 2004; Sonnenschein et al., 2010; Xue & Meisels, 2004). Thus, although meaning construction or comprehension should be, and is, emphasized in the earliest grades, it may typically garner more instructional importance after first grade.

At the same time, the lack of an interaction effect involving meaning instruction emphasis and NE versus Asian LM is somewhat surprising. Young Asian LMs would not likely have been exposed to much, if any, of the content of first-grade texts, and as such, their English vocabularies might not have been sufficiently extensive to build meanings from some texts. In that circumstance, somewhat more emphasis on meaning instruction as compared with NEs might have been expected for the Asian LMs. Only one explicitly relevant prior study was located (Vadasy & Sanders, 2012). In that study of lower achieving students, NE versus LM *did* moderate the relation between instructional emphasis on meaning and reading growth from first through second grade. Lower achieving NEs' reading growth by the end of second grade benefitted from more first-grade meaning instruction, while linguistically diverse LMs did *not* benefit. Thus, the prior study result for LMs was similar to the present study result for Asian LMs, but the results diverged for NEs. The disparate finding for NEs across the two studies might be due to the comparative time frames across the two studies, with the current study stretching across eight grades versus two.

Another possibility for a lack of NE versus Asian LM moderation on the relation between the degree of first grade meaning emphasis and reading ability growth may relate to teachers' beliefs about the Asian LMs' language abilities. Perhaps given that the Asian LMs had acquired at least some oral English, teachers may have felt that Asian LMs' English was adequate to grasp the meanings in the low-level texts to which they were exposed. As a result, teachers may have thought that added meaning instruction/activities was unnecessary.

Amount of Reading Instruction/Activities in Relation to Reading Ability Growth

Overall amount of reading instruction/activities was unrelated to reading growth and was not differentially related to reading ability growth according to NE versus Asian LM. The lack of relation with reading growth at first seemed puzzling. No prior researchers have examined such a relation for LMs. However, three prior sets of researchers examined the relation for NEs (one through kindergarten, one through first grade, and one for kindergarten through elementary grades). Two of the three studies used the same measure of instructional time spent on reading as was used in the present study. Amount of reading instruction/activities in kindergarten or kindergarten and first grade was positively associated with reading ability growth in all three studies (Downer & Pianta, 2006; Sonnenschein et al., 2010; Xue & Meisels, 2004). The variant result for the NEs in the present study may be connected to the fact that earlier studies did not extend past fifth grade, whereas the current study continued through eighth grade. Perhaps the impact of amount of early-grade reading instruction wanes over longer periods of time.

The lack of effect for amount of time spent on first-grade reading instruction/activities in the present study likely was *not* due to lack of variance in amount of daily time spent on reading instruction/activities. The average amount of reading instruction/activities time was between 61 and over 90 minutes a day, and the standard deviation reflected a range from upward of 31 minutes to over 90 minutes a day. Teachers, on average, spent approximately one to one-and-a-half hours per day on reading instruction/activities. However, some spent far less time on reading, while others spent more

than double the amount of time. A similar range in frequency and duration of language and literacy instruction was previously found for Head Start Latino dual-language learners, ranging from 23 minutes to 82 minutes per day (Jacoby & Lesaux, 2017).

The lack of NE versus Asian LM moderation on the relation between amount of time spent on reading instruction/activities and reading ability growth may also be explained if teachers viewed the Asian LMs' oral English ability adequate to grasp intended instruction and activities in the same amount of time as NEs. Whether similar results would adhere for Asian students with less oral-English ability by the end of kindergarten is unknown.

Asian LM Reading Ability Trajectories by Region

In the preliminary examination, Asian LMs from all three regional groups performed similarly on reading ability initially and growth. Results diverge from Li and Yang's (2015) finding that Southeast Asian children's reading growth rates were significantly lower than those of South Asian and East Asian children. The difference may be due to different samples or analysis at different time points. Li and Yang (2015) examined growth from kindergarten through third grade, while the present study examined growth from first through eighth grade.

Asian LM and NE Reading Ability Trajectories

When viewed as a whole, regardless of instructional emphasis, Asian LMs initially (end of first grade) statistically significantly outperformed NEs. An Asian LM advantage in reading ability at the start of the reading trajectory (end of first grade) was comparable to results from the one prior study that studied Asian children's reading growth. Roberts et al. (2010) found that Asian LMs with at least minimal oral English ability outperformed NEs in reading ability as early as kindergarten. As noted earlier, given the variability in initial oral English proficiency for Asian LMs in the present study, with many barely passing the screener, it seemed unlikely that, taken as a whole, the Asian LMs' oral English abilities were equivalent to, or surpassed, NEs'. Consequently, the slight Asian LM advantage at the start of the reading trajectory likely was not due to superior oral English ability. In that light, their reading ability advantage over NEs is remarkable.

That Asian LMs, on average, marginally outperformed NEs at the end of first grade was notable, but the more dramatic difference between the two language groups was in the degree of middle grades deceleration. That is, Asian LMs' reading ability growth rate outpaced NEs'. Moreover, if the deceleration difference were maintained or exacerbated through high school, the reading ability gap between the two language groups would increase. Although middle grades reading deceleration has been documented as typical in prior studies, including for linguistically diverse English learners (Cutuli et al., 2013; Kieffer, 2008, 2011; Roberts et al., 2010), and therefore not unexpected, the comparatively lesser degree of deceleration for Asian LMs *was* unexpected.

No prior studies are available comparing Asian LMs' and NEs' reading growth trajectories through the middle grades, and consequently, only conjectures about possible reasons for the trajectory differences can be made. Because the Asian LM advantage would not likely be due to initial oral English superiority as compared to NEs, one might expect Asian LMs' middle-grade reading ability to decelerate more than NEs'. Deceleration might occur because as grades increase, requirements for academic vocabulary knowledge increase (e.g., Stahl & Nagy, 2006). Asian LMs could have potential underexposure to English in home, school, and other settings, underexposure that may levy against vocabulary and content knowledge growth.

The present result may be considered in light of two prior comparisons of LMs taken as a monolithic group and their NE peers' reading growth (Kieffer, 2008, 2011). Before controlling statistically for SES, LMs most fluent in English displayed a reading ability trajectory through eighth grade that was identical to NEs (Kieffer, 2011). After controlling for SES, those LMs actually very slightly surpassed NEs through fifth grade in high-poverty settings (Kieffer, 2008) and through eighth grade (in settings undifferentiated by poverty; Kieffer, 2011). Similarly, on the whole, Asian LMs in the present study slightly surpassed NEs in reading through eighth grade, when SES was controlled.

Factors other than initial oral English proficiency may have been at play for Asian LMs in the present study. Differential trajectory effects could be related to cultural surroundings, as research documents that Asian LM parents value and emphasize the importance of literacy for children's academic achievement and general success, perhaps to a greater extent than their NE peers (e.g., Peng & Wright, 1994). It is possible that the Asian LMs in the present study came from homes that valued academic success. However, there are no available data to confirm or disconfirm the possibility.

Limitations

The current study has boundaries that should be noted. First, Asian native oral language was not available in the ECLS-K data set. It could be important to address native oral ability in future statistical modeling because native oral language proficiency has been shown to have a bearing on learning to read in an additional language (e.g., Kieffer, 2012b). Second, because the present sample was limited to Asian LMs deemed sufficiently proficient in English oral language by the spring of kindergarten to take the reading assessment, findings are generalizable only to similar students. Relatedly, the ECLS-K did not assess NEs on their English oral language abilities. Third, although mother's country of birth was provided, which may give insight into Asian LMs' native language, the public-use version of the

ECLS-K data set suppressed data for Asian LMs' specific native language to protect participant identity. Therefore, specification of Asian LMs' native language was not feasible, and it remains that possible differences may be found according to home language.

Practice and Policy Implications

The present study suggests that the degree to which sounds/letters were emphasized in first grade had slightly differential effects for *long-term* reading ability growth of NE versus Asian LM students. Results suggest the importance of differentiated instruction, but not just simplified differentiation by NE versus Asian LM. Although some Asian LMs and NEs benefitted comparatively more from greater first-grade emphasis on sounds/letters, others benefitted from less emphasis. One implication is that rather than considering "fixed" programs of sounds/letters instruction for Asian LMs and other "fixed" programs for NEs, amount of sounds/letters instruction needed would require further diagnostic consideration of students' reading knowledge. The latter type of differentiation may not only be important but also more difficult for teachers to learn and implement, given the need to consider several factors such as student's prior knowledge and knowledge to be learned. It is also more challenging for policy considerations since a one-size-fits-all approach would not be feasible.

Second, of the first-grade reading instruction factors investigated in the present study, only sounds/letters emphasis was moderated by NE versus Asian LM status. Perhaps for young Asian LMs with some minimal levels of oral English, added consideration to oral language and cultural differences may not be as critical as was previously thought. With regard to meaning emphasis and reading instruction/activity time, beneficial instruction for NEs may also be beneficial instruction for Asian LMs.

Third, the notable deceleration for all subgroups of students suggests that more attention to developmental reading instruction may be needed for both language groups through the middle-grade years (Kieffer, 2012a). Policies would need to be implemented to ensure continuance of developmental reading instruction.

Fourth, Asian LMs tended to surpass NEs in reading ability at the end of first grade, and one subgroup of Asian LMs (those who started with the highest reading ability levels) outperformed all others at the end of eighth grade. The result suggests that educators could be optimistic about Asian LMs' progress.

Directions for Future Research

The long-run advantage in Asian LMs' lesser reading ability deceleration through the middle grades begs the question of whether the Asian LM students had received reading instruction that was different from their NE peers in years beyond first grade. Unfortunately, the answer to the question cannot be known from the present data, and future studies are needed to address the question. Replication of the present investigation with other ethnic LM subgroups could continue to inform potential differences in the importance of different early-grade instructional emphases and long-term reading growth. Similarly, a replication study, but with Asian LMs who attain minimal oral English proficiency even later than first grade, would clarify the extent to which aspects of findings were specific to Asian LMs who had minimal oral English early on. Finally, similar studies following students through high school would reveal the curvature of reading performance into secondary settings.

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