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THE PUSH FOR MORE CHALLENGING TEXTS: AN ANALYSIS OF EARLY READERS' RATE, ACCURACY, AND COMPREHENSION

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The purpose of the study was to examine the relationship between the challenge level of text and early readers' reading comprehension. This relationship was also examined with consideration to students' word recognition accuracy and reading rate. Participants included 636 students, in Grades 1–3, in a southeastern state. Results suggest that students reading texts well above their actual grade levels, even with sufficient accuracy scores, scored significantly lower on comprehension than students reading texts at their actual grade level. This result also held regardless of students' reading rates. Findings signal the importance of considering text level during instruction and suggest some caution is warranted when pushing students into texts well above their grade levels.

The Common Core State Standards (CCSS; National Governors Association Center for Best Practices [NGACBP] & Council of Chief State School Officers [CCSSO], 2010) call for students to read more complex, higher-level texts in order to be prepared for the challenges of college and the workforce (see CCSS Standard 10 in reading standards for literature and informational text). The widespread adoption of the standards has, in turn, led to popular interpretations suggesting students as young as elementary age should engage with more challenging texts (e.g., Coleman, 2011; Fisher, Frey, & Lapp, 2012; Shanahan, 2011a). Research in this area, however, remains inconclusive (Cunningham, 2013;

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Hiebert, 2013). The push to engage with more complex texts, coupled with a lack of research consensus, compelled the present study.

Although it is clear that for students to be successful at a college level, they need to be able to handle more difficult texts, it remains quite unclear whether this practice is beneficial for readers at the early elementary levels. In fact, Hiebert and Mesmer (2013) caution against “upping the ante” without careful consideration of the possible negative consequences (p. 44). Such consequences might include decreased automaticity and fluency in word recognition, as well as decreased motivation and engagement (Hiebert & Mesmer, 2013).

Research related to this topic is decidedly limited and quite outdated (Cunningham, 2013). What research does tell us is the degree to which text-level matters might depend on the reader. For students who have yet to develop proficient and automatic decoding, for example, time in easier texts remains important. In one study, students who began an intervention with lower fluency rates (50 words per minute or lower) demonstrated greater fluency gains with texts matched at their instructional reading level rather than texts matched to their grade level (O'Connor et al., 2002). But students who began the intervention with higher fluency rates made similar gains regardless of intervention condition.

As texts become more difficult, differences in students' comprehension may also become more pronounced. In general, we know that the variety and number of strategies readers use, as well as their overall comprehension, declines when students move from easier to more difficult texts (Kletzien, 1991; Treptow, Burns, & McComas, 2007). But, as with fluency, this trend may not hold for all readers. When high comprehenders (above the 75th percentile on a standardized test) encountered more difficult texts, they used comprehension strategies more frequently and with more diversity than did low comprehenders (below the 50th percentile) (Kletzien, 1991). Readers determined to be at-risk or learning disabled had the highest comprehension on independent-level texts and the lowest comprehension on frustration-level texts (Treptow et al., 2007). These results are not surprising given the complex nature of reading comprehension (e.g., Kintsch, 2004).

Given the push for increasing the level of difficulty in texts that students encounter but the lack of consensus about whether this is a beneficial practice for readers in early elementary school, in the present study, we examine what happens to students' reading comprehension and reading rate when they are placed in texts they can accurately decode (with at least 90% accuracy) but that exceed their current grade level. The present study addresses two questions. First, is there a relationship between text level and students' reading comprehension? Second, does this relationship between text level and reading comprehension vary according to students' reading rate and/or word recognition accuracy?

Background

Examinations of factors influencing reading comprehension are hardly new; in fact, a considerable body of evidence suggests that comprehension depends on the successful coordination of multiple components, including decoding, automaticity, working memory, oral language, vocabulary, and motivation (Israel & Duffy, 2009). Studies generally support the idea that a reader's performance in these areas contributes to success in comprehension.

Although comprehension is contingent on multiple factors, widely used teacher- or curriculum-based measures tend to rely on only a small number of factors, such as accuracy and reading rate. This holds true not only for measures that are standardized (e.g., DIBELS [Good & Kaminski, 2002]; PALS [Invernizzi, Meir, & Juel, 2007]) but also for less formal measures commonly used (e.g., informal reading inventories). Given the wide use of teacher- or curriculum-based measures to inform grouping and instruction, understanding the contributions of widely measured factors becomes particularly important (e.g., Morris et al., 2013).

Teachers typically employ curriculum-based measures to evaluate students' knowledge and progress as well as to plan for classroom instruction (Deno, 1985; Kim, Petscher, Schatschneider, & Foorman, 2010). Curriculum-based assessments often reflect the goals of classroom curricula, such as students' ability to develop and improve reading accuracy, automaticity, and comprehension (Flynn, Hosp, Hosp, & Robbins, 2011; Fuchs, Fuchs, & Hamlet, 2007). Frequently, curriculum-based assessments, such as

students' reading of progressively difficult texts, are undergirded by the idea that such assessments reflect complex, multidimensional, and genuine reader performance.

Curriculum-based measures' emphasis on reading rate (as an indicator of automaticity) and accuracy aligns with what we know from research. Both accurate and automatic reading of text matters for successful comprehension (e.g., Abbott, Wills, Miller, & Kaufman, 2012; Adlof, Catts, & Little, 2006; Kendeou, van den Broek, White, & Lynch, 2009; Klauda & Guthrie, 2008; Morris et al., 2013; Ouellette & Beers, 2009). The idea that these cognitive factors are influential to reading has its theoretical roots in several theories, including automaticity theory (LaBerge & Samuels, 1974), verbal efficiency theory (Perfetti, 1985), and the simple view of reading (Gough & Tunmer, 1986). Taken together, both research and theory provide grist for the widely held notion that accurate and efficient decoding skills remain central to comprehension.

What remains less clear is the extent to which these factors interact for *beginning* readers and whether the level of text—even when decoding skills prove sufficient—matters. In short, there is little evidence about the extent that rate (as an indicator of automaticity) and accuracy relate to comprehension for readers in early elementary grades. In this literature review, we synthesize research in four related areas. First, we highlight research related to the relationships of reading rate, reading accuracy, and reading comprehension. Next, we examine how the classroom teacher has typically used this information to determine classroom instruction. Then, we discuss the role text level might have on a reader's comprehension. Finally, we briefly discuss the current context of our study within the era of the Common Core State Standards (NGACBP & CCSO, 2010).

Synthesis of Relevant Literature

Relationships Between Rate, Accuracy, and Comprehension

READING RATE AND COMPREHENSION

Students' cognitive resource systems are limited when reading, and resources are needed for both decoding processes as well as comprehension (Gough & Tunmer, 1986). In such a

limited resource system, word recognition automaticity is important because the more conscious effort a reader must devote to decoding, the fewer cognitive resources are available for comprehending (Morris et al., 2013). The construct of word recognition automaticity is typically represented by a measure of the reader's speed or rate (words per minute, or words correct per minute). In a study of fifth graders (around age 10), for example, their speed at reading from a word list was significantly associated with comprehension (Klauda & Guthrie, 2008). In addition, when a reader's rate was measured in context, rate also accounted for significant variation in comprehension (Klauda & Guthrie, 2008; Skinner et al., 2009).

Several studies using the Dynamic Indicators of Basic Early Literacy Skills (DIBELS; Good & Kaminski, 2002) consistently affirm the importance of automaticity. Oral Reading Fluency (ORF) was a better predictor of comprehension than all of the other DIBELS subtests combined (Buck & Torgesen, 2003; Good, Simmons, & Kame'enui, 2001; Riedel, 2007), and ORF predicted reading comprehension with 71–80% accuracy on standardized tests (Riedel, 2007). Correlations between ORF scores and reading comprehension scores were strong, at around 0.7, and students who scored at or above the ORF benchmark performed, on average, at adequate enough levels to pass state mandated tests of reading comprehension.

Notably, measures of reading rate often disregard the eventual role of reading comprehension. That is, many measures of fluency assess a reader's rate when reading a passage but fail to follow this with a measure of comprehension. Readers may read faster if they know they will not be held accountable for comprehension of what they read, which has led some to argue that rate should be measured in the context of reading for meaning only (Morris et al., 2013). In addition, the relationship between rate and reading comprehension varies based on each student's age or grade, and there are strong floor and ceiling effects for reading rate (Paris, Carpenter, Paris, & Hamilton, 2005). For early readers, on average, the relationship between rate and comprehension is weaker because students often rely on decoding skills rather than automatic word recognition. Consequently, the validity of reading rate in predicting comprehension for early readers is weak (Catts, Petscher, Schatschneider, Sittner Bridges, &

Mendoza, 2008). This relationship suggests the potential importance of reading accuracy and its relationship to comprehension, particularly for earlier readers, discussed in the next section.

After the early stages of reading, reading rate (with adequate comprehension), on average, increases steadily from second to fourth grade (around ages 7–9) and then levels off between fourth and sixth grade, around ages 9 to 11 (Morris et al., 2013). For these upper elementary students, the relationship between rate and comprehension is quite strong (e.g., Klauda & Guthrie, 2008; Skinner et al., 2009). In fact, Rasinski and colleagues (2005) even argued for a similarly strong relationship in high school—noting that a lack of appropriate reading fluency (rate) may be one cause of difficulties in reading comprehension.

Appropriate reading rates are not always associated with adequate levels of comprehension. Some researchers have identified students who read with high rates without adequate comprehension as “word callers” (e.g., Riddle Buly & Valencia, 2002; Dennis, 2012). But others question the prevalence of this label and have determined that often students perceived as word callers instead lack appropriate reading fluency (see Hamilton & Shinn, 2003; Meisinger, Bradley, Schwanenflugel, Kuhn, & Morris, 2009). Another consideration is that this prevalence might instead depend on the age of readers. For example, Meisinger and colleagues (2009) found that there was a low incidence of students who were true word callers in primary grades but that they were more frequent in the upper elementary grades.

DECODING ACCURACY AND COMPREHENSION

In addition to rate, research consistently highlights connections between decoding accuracy and comprehension (Juel, Griffith, & Gough, 1986; Kendeou et al., 2009; Stanovich, Cunningham, & Feeman, 1984; Torgesen, 2000). Studies suggest, particularly for early readers, a strong and positive relationship between decoding and comprehension. For example, Juel et al. (1986) used path analyses to examine the relationship between several cognitive factors and reading comprehension in first graders (around Age 6) and determined that decoding (with a standardized coefficient of 0.71) made a substantial contribution; more recent studies also support this finding (e.g., Kendeou et al., 2009; O'Connor, Swanson, & Geraghty, 2010). In their recent

meta-analysis, García and Cain (2013) found correlations ranging from 0.74–0.86 (across different age ranges) between students' contextual word reading accuracy and reading comprehension, further reinforcing the significance of this relationship.

Notably, this connection between decoding accuracy and comprehension diminishes as children develop and age (Curtis, 1980; García & Cain, 2013; Juel et al., 1986). In fact, for adult readers, decoding accounts for little variation (<1%) in comprehension, with higher-level skills such as vocabulary and print exposure accounting more significantly (Landi, 2010).

HOW THESE COMPONENTS HAVE TYPICALLY BEEN USED TO INFORM INSTRUCTION

Because of the demonstrated relationships among rate, accuracy, and comprehension, these factors are influential in identifying appropriate text levels for students. Betts (1946) initiated the use of accuracy and comprehension to determine the reading needs of individuals. Basing his work on a study by Kilgallon (1942), Betts presented three levels of text reading in his book, *Foundations of Reading Instruction*: (a) basal level for independent reading with greater than 99% accuracy and at least 90% comprehension, (b) instructional level with at least 95% accuracy and at least 75% comprehension, and (c) frustration level with accuracy at or below 90% and 50% or lower comprehension. In 1970, Powell reexamined the criteria for determining instructional text level from informal reading inventories by further investigating and conducting his own version of Kilgallon's study. Powell noted important limitations with respect to the sample, errors scored, how the passages were read, and a misalignment between the data and conclusions. In his study, Powell included 178 children in Grades 1 through 6 (Ages 6–11) and had them read orally to the highest reading level in which they scored at least 70% on a measure of comprehension. Powell determined texts were appropriate instructional levels with accuracy scores of 85% or above for Grades 1 and 2 and between 91% and 94% in Grades 3 through 6.

In contrast, a recent study by Morris et al. (2013), with students in second through sixth grades (Ages 7–11), supported Betts's instructional level for accuracy and comprehension and deemed Clay's (1993) instructional level threshold of 90% accuracy for first graders too low. In addition, Morris et al. called for

the inclusion of rate as a determinant of instructional reading levels.

Differences in Text Level

In addition to considering the factors described above, it is also important to consider issues related to the texts students are reading. In the present study, we examine how rate and accuracy interact to influence reading comprehension when students read texts at two different levels. In doing so, we find it important that we first distinguish between the readability of a text and its level.

A text's readability was once considered an issue of either its syntactic complexity (e.g., Flesch-Kincaid Readability Test, Fry Readability Graph) or its semantic difficulty (e.g., Chall-Dale formula). More recent measures of text readability focus on additional aspects, including text cohesion (e.g., Coh-Metrix, [Graesser, McNamara, & Kulikowich, 2011]). What all of these measures have in common is that they focus on features and qualities of the *text* that contribute to the accessibility of the text's content. A deeper discussion of text readability and text complexity is beyond the scope of the present study (see Hiebert & Mesmer, 2013; Williamson, Fitzgerald, & Stenner, 2013).

We focus instead on the role of the *text level*. We conceptualize this as the match between the reader and the text, and we are specifically interested in how early readers fare when that match is in a text that exceeds the student's grade level by more than two years. Although informal reading inventory criteria suggest the importance of matching students to texts at their instructional level, researchers have also examined reading outcomes when students were placed in texts at varying levels of difficulty.

In general, the effect of text level on reading outcomes is mixed. For example, O'Connor et al. (2002) compared the differential effects on reading growth for students reading high-interest texts matched either to their grade level or their instructional reading level. Although participants in the instructional reading level group demonstrated greater oral reading growth, neither treatment outperformed a control in comprehension growth. Stahl and Heubach (2005) conducted multiple investigations related to their Fluency-Oriented Reading Instruction. They found that for reading fluency practice, second-grade students, around

Age 7, who made significant progress in reading rate and accuracy, on average, tended to choose books near their instructional reading level (mean = 95% accuracy).

On the other hand, some studies suggest readers can make significant gains in more challenging texts. For example, Morgan, Wilcox, and Eldredge (2000) found that when a struggling reader was paired with a better reader and given texts that were significantly more challenging, readers placed in texts two levels above their instructional reading level demonstrated greater growth in their reading level at the end of the intervention than those who read less challenging texts. Of note, although the latter study is often cited in support of the benefits of students working in higher-level text (Fisher et al., 2012; Shanahan, 2011a), methodological issues, such as the rigor of the intervention and the lack of a control group, necessitate that we interpret these findings with caution (Hiebert, 2013).

The relationship between text level and comprehension occasions additional considerations. Students are more apt to be distracted when reading more difficult texts (Feng, D'Mello, & Graesser, 2013). In Feng and colleagues' study, participants read texts that were matched for content but presented at different levels of text difficulty. Students' reading comprehension was lower with the more difficult texts and their minds "wandered" more often. Although that study was with undergraduate students, results proved consistent with a study of third graders (around Age 8), who demonstrated more time on task and had improved comprehension when reading texts at their instructional level, as opposed to their frustration levels (Treptow et al., 2007).

Current Context

All of the factors discussed above, including the relationships of rate and accuracy to comprehension and considerations of how the level of text might also play a role, deserve our particular attention given the current national context. The widespread adoption of the CCSS compels a renewed focus on text complexity (e.g., Hiebert & Mesmer, 2013; Mesmer, Cunningham, & Hiebert, 2012; Shanahan, Fisher, & Frey, 2012). Specifically, Standard 10 in the reading standards for both literature and informational text

require students to read within particular bands of text complexity (NGACBP & CCSSO, 2010). The push for more difficult texts is undeniable. David Coleman, an author of the CCSS has stated, “. . . I am saying in a clear voice, the core of instruction, core classroom time becomes the shared encounter of sufficiently difficult text” (Coleman, 2011).

Some insist that students should be able to handle texts at levels that far exceed what we have traditionally considered their “instructional” level (e.g., Halladay, 2012; Morgan et al., 2000; Shanahan, 2011b). But more research is warranted (Hiebert, 2013).

Present Study

Although the relationships among accuracy, rate, comprehension, and text level have been investigated in previous studies, we lack understanding of their interactions, particularly for beginning readers. Moreover, given the recent push by the CCSS to have students engage with higher-level texts, it becomes important that we consider the implications. Consequently, the purpose of the present study is to investigate such interactions and consider the implications.

Methods

Using a single time-point, cross-sectional design, data were collected from 636 students, with a median age of 6 years, 9 months, from 147 first- through third-grade classrooms. The classrooms were located in 16 high-poverty low-performing schools from diverse communities within a southeastern state in the United States. Reading assessments were administered to random samples of approximately 25% of children in each classroom in first, second, and third grades. Analysis of covariance was conducted.

PARTICIPANTS

Table 1 contains demographic characteristics of students (percentages for all demographics may not sum to 100% due to missing data). There were 636 student participants, which included 139 first-grade students (median age 5 years, 5 months), 229 second-grade students (median age 6 years, 5 months), and 265 third-grade students (median age 7 years, 6 months). Across

TABLE 1 Student Demographics (n = 636)

Variable	n	%
Race/Ethnicity		
Black/African American	420	66.0
White/Caucasian	128	20.1
Latino/a	76	11.9
Two or more races	7	1.1
Asian	4	0.6
Native American	1	0.2
Gender		
Female	344	54.1
Male	276	43.4
Grade		
First	139	21.9
Second	229	36.0
Third	265	41.7
Lunch Status		
Free/Reduced Price	481	75.6
Full Pay	155	24.4

the sample, 54.1% of students were female and 43.4% were male. Ethnicities included 66.0% African-American, 20.1% Caucasian, 11.9% Latino/a, 1.1% multi-racial, 0.6% Asian, and 0.2% Native American. A number of students (11.8%) were English language learners, and 75.6% of students were eligible for lunch subsidies. All students attended federally designated high-poverty, low performing schools.

READING INSTRUCTION

Across all 16 schools, student participants received core reading instruction from classroom teachers who employed basal reading programs (e.g., Scott Foresman Reading; Afflerbach et al., 2002). Each basal program noted five key areas of reading instruction: phonemic awareness, phonics knowledge, fluency, vocabulary, and reading comprehension (cf. NICHD, 2000). Teachers followed instructional guidelines provided by the basal for daily lesson planning as well as pacing and sequencing throughout the school year. Teachers used basal program materials such as review materials, student texts, flip charts, big books, and leveled books.

Additionally, students participated in daily teacher-guided small group reading lessons.

Data Sources, Variables, and Analyses

DATA SOURCES

There were two types of data sources—results from a curriculum-based reading assessment and demographic information provided by the schools. The first, the reading assessment, was a curriculum-based measure selected to represent (a) specific features of reading development supported by prior research (NICHD, 2000), (b) assessments used in prior research (Morris et al., 2013), and (c) types of assessments typically used in everyday curriculum by teachers to evaluate student progress and adjust instruction (McCabe, Margolis, & Barenbaum, 2001).

For the reading assessment, students orally read progressively difficult passages out loud from an informal reading inventory (Bader & Weisendanger, 1994). While a student read out loud, an examiner marked miscues on a second copy of the passage (Barr, Blachowicz, Katz, & Kaufman, 2002; Clay, 2002), timed the student's reading for one minute, and asked the corresponding comprehension questions (from Bader & Weisendanger, 1994), marking whether the student's answers were correct. Four reading variables were created from the reading assessment—text level, comprehension, rate, and accuracy—and each is detailed in the following section.

The second type of data source, the demographic data, was collected from schools about each student. Data included students' age and lunch status (full pay vs. free/reduced price). Additional demographic data (e.g., home literacy, parents' education) were not collected because this study was part of a larger investigation.

READING ASSESSMENT VARIABLES AND RELIABILITY

Four variables were created from students' performance on the reading assessment. These variables were Text Level, Comprehension, Rate, and Accuracy.

We developed our Text Level variable in two stages. First, as students read progressively difficult passages and examiners marked miscues, the highest-level passage a student was able to

read with at least 90% word recognition accuracy was labeled his/her *contextual word recognition* (CWR) level. We next converted each student's CWR level to a grade equivalent score (a score of "0" indicated that a student did not pass even the lowest reading passage; 0.25 indicated approximately a preprimer level; 0.50 indicated approximately a primer level; 1.00 indicated approximately end-of-first-grade level; 2.00 approximately second-grade level; and so on). Accordingly, a second-grade student whose CWR was second grade received a score of 2.00. Then, to operationalize our construct of the challenge level of the text read by students, we created Text Level, a two-level variable. To do this, we compared their CWR level (grade equivalency) with their actual grade level. Students who were *at level* had CWR levels that were equal to or up to one grade level above their actual grade level. Students who were *above level* had CWR levels that were two grade levels or more above their actual grade level. This resulted in each student's Text Level score having a value of either *at level* (0) or *above level* (1). For example, in keeping with the example from above, our second-grade student with a highest CWR level of second grade (2.00) would receive a Text Level score of 0.

Comprehension was also determined by the students' performance on the reading assessment. After the student read the passage at their determined CWR level, the examiner asked the corresponding open-ended comprehension questions (from Bader & Weisendanger, 1994). Each answer was rated as correct or incorrect. The Comprehension score represented the percent of comprehension questions that a student answered correctly.

Our third and fourth variables, Rate and Accuracy, were related to students' fluency performance while reading the CWR passage. For rate, the examiner timed each student for one minute as they read the CWR level passage. Rate represented the number of words a student read correctly per minute. Accuracy represented the percentage of words read correctly for the CWR-level passage.

ASSESSMENT PROCEDURES

A study investigator trained a literacy facilitator at each school, who in turn trained classroom teachers in assessment procedures. Classroom teachers followed a structured protocol to

administer and score the assessments during a three-week period near the end of the school year. To assess faithfulness of assessment *administration*, trained project graduate assistants were present in approximately 35% of the classroom teacher/student assessment sessions. Scoring agreement was calculated for each classroom teacher's and project graduate assistant's independent scoring of each student assessment. In addition, traditional interrater reliability estimates were determined with a random selection of 10% of the student participants. Both sets of reliability estimates are provided for each of the four reading variables in Table 2.

ANALYSIS

In considering our research questions, we were primarily concerned with the main effect of Text Level on Comprehension. Our secondary concern centered on the interactions of Text Level with Accuracy and Text Level with Rate related to Comprehension as the outcome. To address these, we used an analysis of covariance (ANCOVA) model: The dependent variable was Comprehension and the between-subjects factor was Text Level (two levels: at grade, above). Covariates included Rate and Accuracy as well as the two interaction terms of interest—Text Level by Rate and Text Level by Accuracy. Additionally, preliminary models included students' age and lunch status (as a proxy for SES). Both variables were non-significant and were excluded from the final model. We report effect sizes in two ways. In some instances we use Cohen's *d* to describe the magnitude of the difference between means. At other times, we use eta squared (η^2) to describe the proportion of variance explained.

Results

Our research questions were: (a) how does text level relate to students' reading comprehension, and (b) does the relationship between text level and reading comprehension vary according to students' reading rate and/or word recognition accuracy?

Preliminary Analyses

Prior to running the ANCOVA model, we conducted a preliminary examination of the variables. Table 3 shows means and

TABLE 2 Variables and Reliability Estimates

Variable	Definition	Faithfulness of Administration Reliability	Interrater Scoring Reliability
Text Level	Three-level (below grade, at grade, above grade) variable comparing students' contextual word recognition (CWR) levels to their actual grade levels.	0.84*	0.86*
Comprehension	Percentage of comprehension questions answered correctly for CWR passage	0.89	0.83
Accuracy	The ratio of the number of words correctly pronounced to the number of words attempted for the CWR passage expressed as a percentage	0.95	0.92
Rate	The number of words pronounced correctly in one minute when reading the CWR passage	0.89	0.88

Note. *Reliability estimates are provided for determining contextual word recognition (CWR) levels during the creation of text level. For both faithfulness of administration and interrater scoring, reliability estimates were calculated for perfect agreement between the classroom teacher and graduate assistant for CWR, within five percentage points for comprehension and accuracy and within two words for rate.

TABLE 3 Means (S.D.) for Comprehension, Rate, and Accuracy by Text Level

Variable	N	Mean	S.D.	Minimum	Maximum
At Grade					
Comprehension	189	75.79	20.50	18	100
Rate	189	62.65	22.90	21	182
Accuracy	189	93.48	2.49	90	99
Above Grade					
Comprehension	447	47.66	30.98	0	100
Rate	447	77.62	23.76	20	159
Accuracy	447	93.98	2.46	90	100
Marginal Means					
Comprehension	636	56.02	31.05	0	100
Rate	636	73.17	24.47	20	182
Accuracy	636	93.83	2.48	90	100

Note. Comprehension and accuracy scores are percent correct scores; Rate is the number of words read correctly in one minute. Students *at grade* level had Contextual Word Recognition (CWR) levels equal to or up to one grade level above their actual grade level; Students *above* level had CWR levels were two grade levels or more above their actual grade level.

standard deviations by text level (at grade, above grade) and marginal means for the variables used in the ANCOVA. Table 3 shows that there was substantial variability in Rate and Comprehension as indicated by the large standard deviations. Correlations with Text Level and Rate/Accuracy are represented by Spearman's ρ and the correlation between Rate and Accuracy are represented by the traditional Pearson correlation. The correlation between Text Level and Accuracy was very weak and positive (0.08; $p < 0.02$) indicating that, on average, as Text Level increased, students' reading Accuracy increased very slightly. The extremely weak magnitude of the correlation is likely due in part to the restricted range of Accuracy scores. There was a weak positive correlation between Text Level and Rate of 0.25 ($p < 0.01$) indicating, on average, as Text Level increased students' reading Rate also increased. There was a moderate positive correlation between Rate and Accuracy of 0.35 ($p < 0.01$) indicating that, on average, as students' reading rates increased, their Accuracy also increased.

Below we present the results from the ANCOVA model. When interpreting our results, we began with the significant interactions and proceeded to main effects, as is typical with such an analysis. However, in presenting our results below, we organize them by our research questions.

How Does Text Level Relate to Students' Reading Comprehension?

Table 4 shows sources of variance for the ANCOVA model. Students' Text Level was significantly related to Comprehension (significant main effect for Text Level, $\eta^2 = .02$). Regardless of

TABLE 4 Sources of Variance for the ANCOVA Model

	F	df	$p <$	η^2
Text Level*Rate	5.10	1,630	0.025	0.01
Text Level*Accuracy	9.24	1,630	0.003	0.01
Text Level	10.52	1,630	0.002	0.02
Rate	1.23	1,630	0.269	
Accuracy	23.15	1,630	0.001	.03

$R^2 = 0.244$ (adjusted $R^2 = 0.238$).

TABLE 5 Comprehension Means and Standard Deviations by Rate and Text Level for Significant Text Level*Rate Interaction

Rate	TL	N	Mean	SD
Rate Q1	At	79	70.77	20.90
	Above	74	49.80	30.71
	All	153	60.63	28.07
Rate Q2	At	49	81.01	18.33
	Above	111	48.34	29.57
	All	160	58.35	30.57
Rate Q3	At	39	78.54	19.28
	Above	124	47.73	31.62
	All	163	55.10	31.94
Rate Q4	At	22	77.29	22.93
	Above	138	45.90	31.87
	All	160	50.22	32.59

Note. Rate (wcpm) levels were: Quartile 1 = 20.00 through 55.99, Quartile 2 = 56.00 through 70.99, Quartile 3 = 71.00 through 87.99, Quartile 4 = 88.00 through 182.00. TL = Text Level.

students' Rate or Accuracy scores of at least 90%, students in the *at grade* group scored significantly higher on Comprehension compared with students in the *above grade* group (75.79% vs. 30.98%, respectively).

Does the Relationship Between Text Level and Reading Comprehension Vary According to Students' Reading Rate and/or Word Recognition Accuracy?

RELATIONSHIP WITH RATE

There was a significant relationship between Comprehension and Rate but the relationship varied by Text Level (weak significant Text Level*Rate interaction, $\eta^2 = 0.01$). To interpret the significant interaction, we created Table 5 and Figure 1. First, we divided students' Rates into quartiles—students in Quartile 1 (Q1), on average, had the lowest Rates and students in Q4 had the highest Rates. Then, we calculated and entered Comprehension means by Rate quartiles and the two Text Levels (at grade, above grade). Means and standard deviations are provided in Table 5 and the interaction is graphically represented in Figure 1. Notably, Figure 1 shows a slightly different relationship for the two

FIGURE 1 Comprehension means by Rate quartiles and Text Level (At, Above). Rate quartile levels were: Quartile 1 = 20.00 through 55.99, Quartile 2 = 56.00 through 70.99, Quartile 3 = 71.00 through 87.99, Quartile 4 = 88.00 through 182.00. Comprehension score was percent correct.

Text Level groups across the four Rate quartiles. On average, for students in the *above grade* Text Level group, as students' rates increased, Comprehension scores decreased slightly (from 49.80% to 45.90%). Conversely, for students in *at grade* group, on average, as students' Rates increased from Quartile 1 to Quartile 2, Comprehension scores increased (from 70.77% to 81.01%); then, as students' Rates increased to Quartile 3 and 4, students' Comprehension decreased (to 78.54% and 77.29%).

RELATIONSHIP WITH ACCURACY

There was also a significant weak relationship between Comprehension and Accuracy, but the relationship varied by Text Level (significant Text Level*Accuracy interaction, $\eta^2 = 0.01$). To interpret the significant interaction, we created Table 6 and Figure 2 using the same process as above. Table 6 shows means and standard deviations and Figure 2 shows the graphic representation of the relationship. Together, Table 6 and Figure 2 demonstrate that there was a different relationship for students in the *at* Text Level group compared with the *above* Text Level group.

On average, across all four Accuracy quartiles, as Accuracy increased for students in both groups, Comprehension increased, after a slight decrease in the second quartile. For the *at grade* group, Comprehension increased slightly; of note, this increase was from 74.43% to 81.28%—an increase of 8.33% from the sec-

TABLE 6 Comprehension Means and Standard Deviations by Accuracy and Text Level for Significant Text Level*Accuracy Interaction

Accuracy	TL	N	Mean	SD
Accuracy Q1	At	57	74.43	21.28
	Above	101	40.52	28.52
	All	158	52.75	30.76
Accuracy Q2	At	54	72.95	22.41
	Above	103	35.18	29.29
	All	157	48.17	32.49
Accuracy Q3	At	37	75.94	17.29
	Above	125	51.21	30.74
	All	162	56.86	30.05
Accuracy Q4	At	41	81.28	19.06
	Above	118	60.89	29.02
	All	159	66.15	28.21

Note. Accuracy levels were: Quartile 1 = 90% through 91.99%, Quartile 2 = 92% through 93.76%, Quartile 3 = 93.77% through 95.644%, Quartile 4 = 95.645% through 100%. TL = Text Level.

FIGURE 2 Comprehension means by Accuracy quartiles and Text Level (At, Above). Accuracy levels were: Quartile 1 = 90% through 91.99%, Quartile 2 = 92% through 93.76%, Quartile 3 = 93.77% through 95.644%, Quartile 4 = 95.645% through 100%. Comprehension score was percent correct.

ond quartile to the fourth. For students in *above grade* Text Level group, as Accuracy increased, Comprehension increased more significantly, (25.71%) from the second quartile to the fourth. However, although the relationship differed for the two groups, it is important to note that across all four Accuracy quartiles, students in the *above grade* Text Level group, on average, had lower Comprehension scores, regardless of Accuracy. Even those students reading in Quartile 3 and 4 with Accuracy ranging from 94% to 100% had Comprehension scores that were low (51.21% and 60.89%).

Finally, there was a main effect for Accuracy, but it was over-ridden by the significant interaction with Text Level.

Conclusions, Discussion, and Future Directions

In the following sections, we first present the main conclusions related to our research questions—how text level relates to comprehension and whether the relationship varied according to students' reading rate and/or word recognition accuracy. Then we provide discussion of the main conclusions, followed by study limitations and suggestions for future research. We close with implications for research, policy, and practice.

Prior to the following sections, we note that our study was conducted with students reading on their own, within an assessment context. Our study was not an evaluation of whether students' learning varied based on reading texts at varying levels during instruction. Instead, our purpose was to investigate what happened when students read texts of different levels absent of support, knowing that such a situation could potentially occur in classrooms implementing the CCSS.

Conclusions

First, there was a relationship between students' reading comprehension and the level of text read. Students reading texts well above their actual grade levels had significantly lower comprehension scores than students reading texts at their actual grade levels.

Second, reading rate was related to comprehension, but that relationship varied by the level of the text. On average, for students in the *above grade* text level group, as students' rates in-

creased, comprehension scores decreased, and comprehension scores for all four (rate) quartiles were below 50%. For students in the *at grade* group, there was a different relationship—as their rates increased, comprehension scores increased across the first two (rate) quartiles and decreased slightly across the last two quartiles. However, comprehension scores for each quartile were above 70%.

Finally, reading accuracy was related to comprehension, but again, that relationship varied by the level of the text. On average, as accuracy increased, comprehension increased slightly for students in the *at grade* text level group. For students in the *above grade* text level group, as accuracy increased, comprehension increased more significantly. However, no matter students' reading accuracy, students in the *above grade* group, on average, had lower comprehension scores.

Discussion

Given the current national context of the CCSS, the results of the present study suggest that we proceed with caution when placing students in higher level texts. The push for students to read higher-level and more challenging texts necessitates that researchers, teacher educators, and practitioners fully understand what happens when readers—particularly in the elementary grades—are put in texts that might exceed their grade levels, without appropriate instructional support. In our study, which occurred in an assessment context where readers did not receive support, children who read passages at least two grade levels above their actual grade level—even with at least 90% decoding accuracy—on average, had comprehension scores that fell below 70%, often considered the minimum instructional comprehension score (Morris, 2008). The significant relationship between reading comprehension and the text level demonstrated that even regardless of rate or accuracy, students reading texts well above their actual grade levels had significantly lower comprehension scores than students reading texts at their grade levels. The present study highlights the need for students to receive considerable instructional support if they are reading higher-level, challenging texts (e.g., Frey & Fisher, 2013).

Previous researchers have demonstrated mixed findings. One study showed that instruction with neither grade level nor instructional level matched texts outperformed a control in comprehension growth (O'Connor et al., 2002). Another showed that struggling readers paired with better readers demonstrated greater growth when the dyads used texts two grade levels above the struggling students' instructional reading levels (Morgan et al., 2000). Conversely, the current study demonstrated something different—students reading texts well above their grade level had significantly lower comprehension scores than students reading texts at their grade levels. However, the present study did not examine reading *growth*. This relationship held true across all levels of students' rates and accuracy when related to comprehension and highlights the importance of exercising caution when considering appropriate text levels for students.

The relationship between rate and comprehension varied by whether students were reading texts at, or above, their grade levels. For students reading texts at their grade levels, as rate increased, comprehension increased initially and then held steady. On the other hand, for students reading texts above their grade levels, a slightly different relationship was noted. As students' rates increased, their comprehension decreased. This contributed to an overall decline in comprehension, regardless of reading rates, for students reading texts well above their grade level. This finding builds on studies that have shown that rate is significantly related to comprehension (Klauda & Guthrie, 2008; Skinner et al., 2009) by demonstrating the complexity of the relationship. In our preliminary analyses, there was an overall significant positive correlation between rate and comprehension of 0.25, which might imply that as students' reading automaticity increased, so did their reading comprehension. However, while rate and comprehension are related overall, characteristics of the text, such as the level of the text, may affect that relationship in meaningful ways, as was the case in the current study.

We echo the sentiments of others (e.g., Alt & Samuels, 2011; Morris et al., 2013) regarding the importance of considering the role of rate in comprehension. Measures of rate absent of comprehension are likely to yield information that misrepresents the role of rate in comprehension. Data from our study demonstrate the potential effect of text level on the relationship

between rate and comprehension and highlight potential dilemmas for teaching reading and having students in texts well above their grade levels. Caution should be taken when considering a move to students' reading of higher leveled texts, and careful attention should be paid to developing appropriate instructional supports if higher texts are used.

Likewise, the relationship between accuracy and comprehension varied by whether students were reading texts at, or above, their grade levels. This finding reveals new information about the potential complexity of such a relationship and extends the findings of prior studies (e.g., Juel et al., 1986; Kendeou et al., 2009). While research dating back 20 years or more established the relationship between students' accuracy and comprehension, the current study highlights the complexity of such a relationship, in part based on the level of the texts students read.

Essentially, text level affected the relationship between students' reading accuracy and comprehension—demonstrating that for students reading texts at their grade level, comprehension remains adequate, with comprehension increasing slightly as accuracy increased from 90% to 100%. However, when students read texts well above grade level—even with at least 90% accuracy—on average, their comprehension increased as accuracy increased but notably remained below adequate levels. These results are hardly surprising given the likely demands of higher-level texts (i.e., vocabulary, background knowledge, less text coherence).

Notably, our study restricted students' accuracy to 90% or better, demonstrating that text level can affect the relationship between accuracy and comprehension, even with a constrained range of commonly accepted accuracy scores. As students are presented with higher levels of texts based on the recommendation from the CCSS, it is likely that their accuracy levels may fall below the 90% threshold used in the current study. Consequently, in those scenarios, students' comprehension levels could drop even lower than in the current study. While the potential exists for the CCSS to improve literacy teaching and learning, we urge the field to use caution in moving students to higher-level texts without significant instructional support. There is a compelling need for research to inform instructional practices related to the CCSS text level requirements.

Limitations

The results of our study should be considered in light of three potential limitations. First, participants' reading accuracy was somewhat accounted for in our measure of rate. Although we present it as a limitation, the use of words correct per minute (wcpm) as a measure of fluency instead of words per minute (wpm) is commonplace (e.g., Kuhn & Rasinski, 2011). Furthermore, Morris et al. (2013) converted wcpm to wpm using a factor of 0.95, demonstrating the close relationship between the two constructs. An additional potential limitation of our study involves the assessments used. Our variables all came from students' results on an informal reading inventory. Some have questioned the validity and reliability of informal reading inventories, noting the limitations of the comprehension measures and the time it takes to administer (Paris & Carpenter, 2003). But others highlight the benefits of using classroom reading assessments to assess students (Afflerbach & Cho, 2011). Finally, we recognize that the constrained range of accuracy scores limited our analysis and only permits generalizability to students reading texts with 90% accuracy or above.

Implications for Policy, Practice, and Research

Hiebert and Mesmer (2013) warned against possible misinterpretations of the CCSS, particularly when considering the notion of text complexity and early readers. Without studies to refute the "unintended, negative consequences" (p. 48) of matching early readers with complex texts, they called for more research. Our findings—particularly that students, regardless of decoding ability, score significantly lower on comprehension when reading texts that far exceed their grade level—underscore the concerns of Hiebert and Mesmer. Specifically, given that the participants reading above their grade level had comprehension levels ranging between 35.18% and 60.89%, even when their decoding skills proved sufficient, should be considered a negative consequence of reading texts that are too difficult. With many states adopting the CCSS, it becomes important that the policies not be misapplied or misinterpreted.

Given current practice of using accuracy to determine instructional reading levels, our study also holds implications for

teachers. If students are matched in texts that far exceed their grade level, it becomes important that teachers provide appropriate scaffolding and support for comprehension. Additionally, the results confirm the importance of teachers measuring students' rates within the context of reading for meaning (Alt & Samuels, 2011; Morris et al., 2013). Given the complexity of the relationships among rate, accuracy, comprehension, and text level, teachers should thoughtfully apply and interpret curriculum-based measures that honor these complexities.

There are many opportunities for related research. Findings from this study suggest a need to proceed with caution in the push to have students reading higher-level texts. Even when students' accuracy and rate were adequate, students' reading comprehension plummeted when reading texts at levels that far exceeded their grade level. Multiple opportunities for future research in this area are possible. Our study considered text level in light of how much higher the text level was than each student's grade level. Future research might address how specific aspects of text difficulty (e.g., text cohesion, level of vocabulary) relate to comprehension for early readers. In addition, other researchers may want to consider collecting additional data. For example, researchers could consider the use of both informal reading measures and more standardized measures (e.g., Buly & Valencia, 2002; Dennis, 2012) or they could collect data about students' reading of multiple passages at the same level (e.g., Petscher & Kim, 2011). Future intervention research could demonstrate how instructional scaffolding might support students when reading texts that prove challenging. Our study examined the relationships among rate, accuracy, and comprehension within a testing environment while students read texts without teacher support. Future researchers should investigate how teacher scaffolding might influence relationships among these factors to support students' comprehension of higher-level texts.

Final Thoughts

Given the recommendation from the CCSS to have students reading higher-level texts, findings from the current study demonstrate the need for careful consideration for instruction. As text levels increase compared to students' grade levels, it is likely that

students' average comprehension may decrease. Overall, findings from our study signal the importance of considering text level during instruction and occasion caution in pushing students into texts well above their grade level without adequate instructional support (Frey & Fisher, 2013). Like many, we recognize the potential of the CCSS. But we fear that the push to have students in more difficult texts might become another example of what Stahl (1998) described as faddish enthusiasms through which instructional implementation occurs long before researchers have an opportunity to substantiate the practice.

References

- Abbott, M., Wills, H., Miller, A., & Kaufman, J. (2012). The relationship of error rate and comprehension in second- and third-grade oral reading fluency. *Reading Psychology, 33*, 104–132.
- Adlof, S. M., Catts, H. W., & Little, T. D. (2006). Should the simple view of reading include a fluency component? *Reading and Writing, 19*, 933–958. doi:10.1007/s11145-006-9024-z
- Afflerbach, P., Beers, J., Blachowicz, C. L. Z., Boyd, C. D., Cheyney, W., Diffilly, D., . . . Wixon, K. (2002). *Scott Foresman reading*. Glenview, IL: Scott Foresman, an imprint of Pearson Education.
- Afflerbach, P., & Cho, B.-Y. (2011). The classroom assessment of reading. In M. L. Kamil, P. D. Pearson, E. B. Moje, & P. Afflerbach (Eds.), *The handbook of reading research* (vol. 4, pp. 487–514). New York: Routledge.
- Alt, S. J., & Samuels, S. J. (2011). Reading fluency: What is it and how should it be measured? In R. Allington & A. McGill-Franzen (Eds.), *Handbook of reading disabilities research* (pp. 173–182). Mahwah, NJ: Routledge.
- Bader, L. A., & Weisendanger, K. (1994). *Bader reading and language inventory* (2nd ed.). New York: Merrill.
- Barr, R., Blachowicz, C. L. Z., Katz, K., & Kaufman, B. (2002). *Reading diagnosis for teachers: An instructional approach* (4th ed.). Boston: Allyn & Bacon.
- Betts, E. A. (1946). *Foundations of reading instruction*. New York: American Book.
- Buck, J., & Torgesen, J. (2003). *The relationship between performance on a measure of oral reading fluency and a performance on the Florida Comprehensive Assessment Test*. [FCRR Technical Report #1]. Tallahassee, FL: Florida Center for Reading Research.
- Buly, M. R., & Valencia, S. W. (2002). Below the bar: Profiles of students who fail state reading assessments. *Educational Evaluation and Policy Analysis, 24*, 219–239. doi:10.3102/01623737024003219
- Catts, H. W., Petscher, Y., Schatschneider, C., Sittner Bridges, M., & Mendoza, K. (2008). Floor effects associated with universal screening and their impact on the early identification of reading disabilities. *Journal of Learning Disabilities, 42*, 163–176. doi:10.1177/0022219408326219

- Clay, M. M. (1993). *Reading recovery: A guidebook for teachers in training*. Portsmouth, NH: Heinemann.
- Clay, M. M. (2002). *An observation survey of early literacy achievement* (2nd ed.). Portsmouth, NH: Heinemann.
- Coleman, D. (2011). *Bringing the Common Core to life*. Retrieved from <http://usny.nysed.gov/rttt/docs/bringingthecommoncoretolife/fulltranscript.pdf>
- Cunningham, J. W. (2013). Research on text complexity: The Common Core State Standards as catalyst. In S. B. Neuman & L. Gambrell (Eds.), *Quality reading instruction in the age of Common Core* (pp. 136–148). Newark, DE: International Reading Association.
- Curtis, M. E. (1980). Development of components of reading skill. *Journal of Educational Psychology*, 72, 656–669. doi:10.1037/0022-0663.72.5.656
- Dennis, D. V. (2012). Heterogeneity or homogeneity: What assessment data reveal about struggling adolescent readers. *Journal of Literacy Research*, 45, 3–21. doi:10.1177/1086296×12468431
- Deno, S. L. (1985). Curriculum-based measurement: The emerging alternative. *Exceptional Children*, 52, 219–232.
- Feng, S., D'Mello, S., & Graesser, A. C. (2013). Mind wandering while reading easy and difficult texts. *Psychonomic Bulletin & Review*, 20, 586–592. doi:10.3758/s13423-012-0367-y
- Fisher, D., Frey, N., & Lapp, D. (2012). *Text complexity: Raising rigor in reading*. Newark, DE: International Reading Association.
- Flynn, L. J., Hosp, J. L., Hosp, M. K., & Robbins, K. P. (2011). Word recognition error analysis: Comparing isolated word list and oral passage reading. *Assessment for Effective Intervention*, 36, 167–178.
- Frey, N., & Fisher, D. (2013). *Rigorous reading: 5 access points for comprehending complex texts*. Thousand Oaks, CA: Corwin Literacy.
- Fuchs, L. S., Fuchs, D., & Hamlet, C. L. (2007). Using curriculum-based measurement to inform reading instruction. *Reading and Writing: An Interdisciplinary Journal*, 20, 553–567.
- García, J. R., & Cain, K. (2013). Decoding and reading comprehension: A meta-analysis to identify which reader and assessment characteristics influence the strength of the relationship in English. Advance online publication. *Review of Educational Research*, 84, 74–111. doi:10.3102/0034654313499616
- Good, R. H., & Kaminski, R. A. (Eds.). (2002). *Dynamic indicators of basic early literacy skills* (6th ed.). Eugene, OR: Institute for the Development of Educational Achievement.
- Good, R. H., Simmons, D. C., & Kame'enui, E. J. (2001). The importance and decision-making utility of a continuum of fluency-based indicators of foundational reading skills for third-grade high-stakes outcomes. *Scientific Studies of Reading*, 5, 257–288. doi:10.1207/s1532799xssr0503_4
- Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education*, 7(1), 6–10. doi:10.1177/074193258600700104
- Graesser, A. C., McNamara, D. S., & Kulikowich, J. M. (2011). Coh-Metrix: Providing multilevel analyses of text characteristics. *Educational Researcher*, 40, 223–234. doi:10.3102/0013189×11413260
- Halladay, J. L. (2012). Revisiting key assumptions of the reading level framework. *The Reading Teacher*, 66(1), 53–62. doi:10.1002/trtr.01093

- Hamilton, C., & Shinn, M. R. (2003). Characteristics of word callers: An investigation of the accuracy of teachers' judgments of reading comprehension and oral reading skills. *School Psychology Review*, 32, 228–240.
- Hiebert, E. H. (2013). *Addressing the three legs of the text complexity triangle: Quantitative, qualitative, and reader-task systems*. Presentation at the annual meeting of the Literacy Research Association, Dallas, Texas.
- Hiebert, E. H., & Mesmer, H. A. (2013). Upping the ante of text complexity in the Common Core State Standards: Examining its potential impact on young readers. *Educational Researcher*, 42, 44–51. doi:10.3102/0013189X12459802
- Invernizzi, M., Meir, J., & Juel, C. (2007). *PALS 1-3: Phonological awareness literacy screening 1–3* (6th ed.). Charlottesville, VA: University Printing Services.
- Israel, S. E., & Duffy, G. G. (2009). *Handbook of research on reading comprehension*. New York: Routledge.
- Juel, C., Griffith, P. L., & Gough, P. B. (1986). Acquisition of literacy: A longitudinal study of children in first and second grade. *Journal of Educational Psychology*, 78, 243–255. doi:10.1037/0022-0663.78.4.243
- Kendeou, P., van den Broek, P., White, M. J., & Lynch, J. S. (2009). Predicting reading comprehension in early elementary school: The independent contributions of oral language and decoding skills. *Journal of Educational Psychology*, 101, 765–778. doi:10.1037/a0015956
- Kilgallon, P. A. (1942). *A study of relationships among certain pupil adjustments in language situations*. (Unpublished doctoral dissertation). Pennsylvania State University, State College, PA.
- Kim, Y.-S., Petscher, Y., Schatschneider, C., & Foorman, B. R. (2010). Does growth rate in oral reading fluency matter in predicting reading comprehension achievement? *Journal of Educational Psychology*, 102, 652–667. doi:10.1037/a0019643
- Kintsch, W. (2004). The construction-integration model of text comprehension and its implications for instruction. In R. B. Ruddell & N. J. Unrau (Eds.), *Theoretical models and processes of reading* (5th ed., pp. 1270–1328). Newark, DE: International Reading Association.
- Klauda, S. L., & Guthrie, J. T. (2008). Relationships of three components of reading fluency to reading comprehension. *Journal of Educational Psychology*, 100, 310–321. doi:10.1037/0022-0663.100.2.310
- Kletzien, S. (1991). Strategy use by good and poor comprehenders reading expository text of differing levels. *Reading Research Quarterly*, 26, 67–86. doi:10.2307/747732
- Kuhn, M. R., & Rasinski, T. V. (2011). Best practices in fluency instruction. In L. Morrow & L. Gambrell (Eds.), *Best practices in literacy education* (4th ed., pp. 276–294). New York: Guilford Press.
- LaBerge, D., & Samuels, S. J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology*, 6, 293–323.
- Landi, N. (2010). An examination of the relationship between reading comprehension, higher-level and lower-level reading sub-skills in adults. *Reading and Writing*, 23, 701–717. doi:10.1007/s11145-009-9180-z
- McCabe, P. P., Margolis, H., & Barenbaum, E. (2001). A comparison of Woodcock-Johnson Psycho-Educational Battery-Revised and Qualitative

- Reading Inventory-II instructional reading levels. *Reading and Writing Quarterly*, 17, 279–289.
- Meisinger, E. B., Bradley, B. A., Schwanenflugel, P. J., Kuhn, M. R., & Morris, R. D. (2009). Myth and reality of the word caller: The relation between teacher nominations and prevalence among elementary school children. *School Psychology Quarterly*, 24(3), 147–150. doi:10.1037/a0017191
- Mesmer, H. A., Cunningham, J. W., & Hiebert, E. H. (2012). Toward a theoretical model of text complexity for the early grades: Learning from the past, anticipating the future. *Reading Research Quarterly*, 47, 235–258. doi:10.1002/rrq.019
- Morgan, A., Wilcox, B. R., & Eldredge, J. L. (2000). Effect of difficulty levels on second-grade delayed readers using dyad reading. *The Journal of Educational Research*, 94, 113–119. doi:10.1080/00220670009598749
- Morris, D. (2008). *Diagnosis and correction of reading problems*. New York: Guilford Press.
- Morris, D., Trathen, W., Frye, E. M., Kucan, L., Ward, D., Schlagal, R., & Hendrix, M. (2013). The role of reading rate in the informal assessment of reading ability. *Literacy Research and Instruction*, 52, 52–64. doi:10.1080/19388071.2012.702188
- National Governors Association Center for Best Practices [NGACBP], & Council of Chief State School Officers [CCSSO]. (2010). *Common Core State Standards for English Language Arts*. Washington, DC: National Governors Association Center for Best Practices, Council of Chief State School Officers. Retrieved from <http://www.corestandards.org/assets/CCSSI.ELAStandards.pdf>.
- NICHD. (2000). *Report of the National Reading Panel. Teaching children to read: An evidence-based assessment of the scientific research literature of reading and its implications for reading instruction: Reports of the subgroups*. Washington DC: National Institute of Child Health and Development.
- O'Connor, R. E., Bell, K. M., Harty, K. R., Larkin, L. K., Sackor, S. M., & Zigmund, N. (2002). Teaching reading to poor readers in the intermediate grades: A comparison of text difficulty. *Journal of Educational Psychology*, 94, 474–485. doi:10.1037//0022-0663.94.3.474
- O'Connor, R. E., Swanson, H. L., & Geraghty, C. (2010). Improvement in reading rate under independent and difficult text levels: Influences on word and comprehension skills. *Journal of Educational Psychology*, 102, 1–19. doi:10.1037/a0017488
- Ouellette, G., & Beers, A. (2009). A not-so-simple view of reading: How oral vocabulary and visual-word recognition complicate the story. *Reading and Writing*, 23, 189–208. doi:10.1007/s11145-008-9159-1
- Paris, S. G., & Carpenter, R. D. (2003). Center for the Improvement of Early Reading Achievement: FAQs about IRI. *The Reading Teacher*, 56, 578–580. doi:10.2307/20205250
- Paris, S. G., Carpenter, R. D., Paris, A. H., & Hamilton, E. E. (2005). Spurious and genuine correlates of children's reading comprehension. In S. G. Paris & S. A. Stahl (Eds.), *Children's reading comprehension and assessment* (pp. 131–160). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Perfetti, C. (1985). *Reading ability*. New York: Oxford University Press.

- Petscher, Y., & Kim, Y.-S. (2011). The utility and accuracy of oral reading fluency score types in predicting reading comprehension. *Journal of School Psychology, 49*(1), 107–129. doi:10.1016/j.jsp.2010.09.004
- Powell, W. R. (1970). Reappraising the criteria for interpreting informal inventories. In D. L. DeBoer (Ed.), *Reading diagnosis and evaluation: Proceedings of the thirteenth annual convention* (pp. 100–109). Newark, DE: International Reading Association.
- Rasinski, T. V., Padak, N. D., McKeon, C. A., Wilfong, L. G., Friedauer, J. A., & Heim, P. (2005). Is reading fluency a key for successful high school reading? *Journal of Adolescent and Adult Literacy, 49*, 22–27.
- Riddle Bully, M., & Valencia, S. W. (2002). Below the bar: Profiles of students who fail state reading assessments. *Educational Evaluation and Policy Analysis, 24*, 219–239. doi:10.3102/01623737024003219
- Riedel, B. W. (2007). The relation between DIBELS, reading comprehension, and vocabulary in urban first-grade students. *Reading Research Quarterly, 42*, 546–567. doi:10.1598/rrq.42.4.5
- Shanahan, T. (2011a). *Rejecting instructional level theory*. Retrieved from <http://www.shanahanonliteracy.com/2011/08/rejecting-instructional-level-theory.html>
- Shanahan, T. (2011b). *What is the biggest literacy teaching myth in 2011?* Retrieved from <http://www.shanahanonliteracy.com/2011/04/what-is-biggest-literacy-teaching-myth.html>
- Shanahan, T., Fisher, D., & Frey, N. (2012). The challenge of challenging text. *Educational Leadership, 69*(6), 58–62.
- Skinner, C. H., Williams, J. L., Morrow, J. A., Hale, A. D., Neddenriep, C. E., & Hawkins, R. O. (2009). The validity of reading comprehension rate: Reading speed, comprehension, and comprehension rates. *Psychology in the Schools, 46*, 1036–1047.
- Stahl, S. A. (1998). Understanding shifts in reading and its instruction. *Peabody Journal of Education, 73*(3&4), 31–67.
- Stahl, S. A., & Heubach, K. M. (2005). Fluency-oriented reading instruction. *Journal of Literacy Research, 37*, 25–60. doi:10.1207/s15548430jlr3701_2
- Stanovich, K. E., Cunningham, A. E., & Feeman, D. J. (1984). Relation between early reading acquisition and word decoding with and without context: A longitudinal study of first-grade children. *Journal of Educational Psychology, 76*, 668–677. doi:10.1037/0022-0663.76.4.668
- Torgesen, J. K. (2000). Individual differences in response to early interventions in reading: The lingering problem of treatment resisters. *Learning Disabilities Research & Practice, 15*, 55–64. doi:10.1207/SLDRP1501.6
- Treptow, M. A., Burns, M. K., & McComas, J. J. (2007). Reading at the frustration, instructional, and independent levels: The effects on students' reading comprehension and time on task. *School Psychology Review, 36*, 159–166.
- Williamson, G. L., Fitzgerald, J., & Stenner, A. J. (2013). The Common Core State Standards' quantitative text complexity trajectory: Figuring out how much complexity is enough. *Educational Researcher, 42*(2), 59–69. doi:10.3102/0013189X12466695