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What is a reading error?

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ABSTRACT
Early efforts to apply knowledge of dialect differences to reading stressed the importance of the distinction between differences in pronunciation and mistakes in reading. This study develops a method of estimating the probability that a given oral reading that deviates from the text is a true reading error by observing the semantic impact of the given pronunciation on the child's reading of the text that immediately follows. A diagnostic oral reading test was administered to 627 children who scored in the 33rd percentile range and below on state-mandated assessments in reading in Philadelphia, Pennsylvania, Atlanta, Georgia, and California elementary schools. Subjects were African American, European American, and Latino, including Latinos who learned to read in Spanish and in English first. For 12 types of dialect-related deviations from the text that were studied, the error rates in reading the following text were calculated for correct readings, incorrect readings, and potential errors. For African Americans, many of these potential errors behaved like correct readings. The opposite pattern was found for Latinos who learned to read in Spanish first: most types of potential errors showed the high percentage of following errors that is characteristic of true errors.

This article considers the question "What is a reading error?" based on a study of 627 struggling readers in inner city elementary schools in Philadelphia, Pennsylvania, Atlanta, Georgia, and California.[1] The work reported here is drawn from an initial assessment of reading skills in research on the effectiveness of an individualized reading program for raising reading levels. It provides a general answer to the question of how to define a reading error, and a method for determining the answer for any specific type. It also demonstrates differences in the profiles of reading errors of different groups who come to the task of reading English with different dialects and language backgrounds, and the probability that a given deviation from the standard reading of a text represents a failure to properly decode and comprehend that text.

Early research on dialect differences in the pronunciation of English pointed to the consequence of these differences for reading research. Initial studies of

African American Vernacular English (AAVE) in Harlem were funded to answer the question of whether dialect differences could be responsible for the great gap in reading achievement between Whites and Blacks (Baratz & Baratz, 1970; Labov, Cohen, Robins, & Lewis, 1968; Stewart, 1970). It was generally agreed by linguists and educators that it was important to distinguish between a difference in pronunciation and a reading error (Goodman, 1969; Labov, 1966).

RESEARCH QUESTIONS

The research problems addressed here spring from the observed difficulty in distinguishing differences in pronunciation from the wrong selections of the word intended in the text. To this end, we initially distinguish "clear errors," where the wrong word has clearly been identified, from "potential errors," which may only represent differences in pronunciation of the target word. We are particularly interested in potential errors that are related to dialect differences and classify them by the type of phonological or grammatical elements involved.

Three research questions are addressed in the work described here. First, can reading errors be distinguished from differences in pronunciation in the oral productions of struggling readers? To answer this question, we argue that the effect of a true reading error may be observed in the increased probability of errors in the text that follows (i.e., the error casts a "semantic shadow"). Second, how does the probability of a following error vary by the phonological and grammatical type of potential error? Third, of equal pedagogical interest, for a given type of potential error, how does the probability of following errors vary by ethnicity and language background?

A RATIONALE FOR THE SEMANTIC SHADOW HYPOTHESIS (SSH)

In the first few years of the acquisition of literacy, the main channel for appraising a reader's progress is oral rather than silent reading. As the reader produces successive words and phrases, the teacher's first concern is to detect reading errors from the oral channel. This channel carries information about the reader's ability to decode the printed text, which is information coded in the spoken format that is the output of the reader's phonetics, phonology, and morphology. This output is related to the text in a complex way, as a set of one to many and many to one relations. Many different spellings are pronounced in the same way, and what first seems to be a correct reading may have been the selection of an irrelevant homonym. Thus, Example 1 might be accepted by the teacher as a correct reading:

1. Text: The *sun* came up.
   Reader: The *son* came up.

If the sequence in Example 1 was followed by additional information, as shown in Example 2, the teacher would realize that the child had selected a wrong homonym, *son* for *sun*.

2. Text: The *sun* came up; it was going to be a hot day.
   Reading: The *son* came up; he was going to be hot.

A reading error can be defined as the selection of the wrong word in a printed text, that is, not the word intended by the writer of the text. A question of some importance is how broadly such incorrect selections affect the overall interpretation of the text. As readers improve in fluency, the number of errors in function words may rise in an innocuous manner, because, for example, the substitution of an indefinite for a definite article often has little effect on the broader interpretation of the sentence as a whole.

The reading error *son* for *sun* need not have produced an error in the text that followed in Example 2, and the reader's misunderstanding might have been hidden until some later overall assessment of comprehension was made. However, such a true reading error will increase the probability of errors in the following text. In such cases, the reading error can be said to cast a "semantic shadow" over the following text. We will use the term *semantic shadow* as a technical term in the analysis and, in the course of the report, develop a generalized method for deciding what a reading error is by measuring the semantic shadow cast by a given type of potential error. Because a semantic shadow refers to an elevated *probability* of a following error, it cannot determine whether a given oral reading was a true error or not, but rather the relative likelihood of its being an error, given its phonological or grammatical type.

A semantic shadow relates to the way in which readers use context in resolving uncertainties they encounter in the reading process, an issue that has been much discussed. To place our current hypothesis in relation to this debate, one can differentiate the SSH from the strong contextual position. It is argued that "direct instruction in phonics is neither necessary nor desirable," because "phonic relations develop consistently . . . as pupils . . . read (Goodman, 1989)." It follows that alphabetic principles are derived from an initial word identification based on the way that the target word is related to surrounding words.

Hundreds of studies have been conducted in the field of miscue analysis, with a main contribution being the provision of evidence that the reading process is related to a reader's use of his or her knowledge of a specific language (Brown, Goodman, & Marek, 1996). Other research on reading miscues has been conducted from perspectives that differ from those of the field's originators, shedding light on the types of miscues used by readers of differing ability levels and their implications for instructing people with dyslexia (Filippatou, 2004; Laing, 2002; Singleton, 2005; Thomson, 1978/2005). This study examines readers' miscues in a different light: it focuses on the degree to which they interfere with the decoding of neighboring text and how they affect the comprehension of text that follow a reader's deviations from print.

A point of view diametrically opposed to the strong contextual position argues that the effects of context often interfere with the decoding process and are detrimental to successful decoding (Lyon & Kameenui, 1998; Stanovich, 1984, 1986). The SSH can be best understood as intermediate to these positions. This hypothesis is the following: contextual effects in word identification are large

enough to significantly increase the probability of an incorrect reading in the grammatical unit immediately following a wrong word identification.

The study reported here is aligned with the positions of Stanovich, Lyon, and Kame′enui through its focus on the accurate decoding of phonemic–graphemic relations. The underlying premise is that inaccurate decoding may not be compensated for by a reliance on semantic and syntactic clues in text, and that it is important to detect such inaccuracies. It will appear that clear errors in the pronunciation of English phonological and grammatical elements have the potential to affect the interpretation of semantic cues to the detriment of readers' comprehension levels, and interfere with their use of semantic and syntactic cues following such deviations in print.

The term semantic shadow is chosen in recognition of the fact that this is a dark area: we know less about how such contextual effects interfere with reading than we know about how lack of phonemic awareness affects reading success. For our struggling readers, this shadow is cast in one direction: it affects success in the following text.[2] By measuring the size of this effect, we seek to distinguish clear reading errors from differences in pronunciation. The solution to this problem is an essential step in measuring readers' progress in mastering alphabetic relations and in identifying the special needs of groups with different language backgrounds. It has equal importance for the construction of methods of intervention. With this information, efforts to improve reading can be concentrated on the types of words and constructions where the highest rates of true errors are found.

The influence of reading fluency rates on text comprehension for struggling readers

A body of empirical evidence exists indicating that oral reading fluency is a significant predictor of reading comprehension in the early to middle and elementary school grades (Buck & Torgeson, 2003; Fuchs, Fuchs, Hosp, & Jenkins, 2001; Fuchs, Fuchs, & Maxwell, 1988; Good, Simmons, & Kame'enui, 2001; O'Connor, White, & Swanson, 2007; Reidel, 2007; Stahl & Heubach, 2005). A developmental approach to explaining children's comprehension of text in relation to basic reading skill acquisition rates follows the premise that as children acquire fundamental word recognition skills and increase their fluency rates, additional factors can contribute to their ability to comprehend text (Chall, 1996; Schwanenflugel et al., 2006). For struggling readers from other language backgrounds, another factor influencing comprehension can be the misinterpretation of the meaning of text following clear errors made as a result of dialect differences.

METHODS

The classification of clear and potential errors

Reading errors classified and tabulated in this report are drawn from a diagnostic reading test developed and used by the Urban Minorities Reading Project (Labov & Baker, 2000). This project was a national study that tested the effectiveness of a reading program developed for struggling readers from differing ethnic/language

backgrounds in urban, low-income elementary schools. The reading text, found in Appendix A, incorporates the full range of orthographic and linguistic structures that have been shown to create decoding problems for beginning readers in order to create a profile of the reader's knowledge of complex alphabetic relations (Labov, Baker, Bullock, Ross, & Brown, 1998).

Researchers administering the test were instructed to write down any deviation from the standard full pronunciation of the printed text, whether they believe it is a reading error.[3] Because we do not know in advance of analysis whether such a deviation is a reading error, we will refer to any entry made by the researchers that is not obviously a failure to identify the intended word as a *potential error* rather than an error. An instance of a clear error can be seen in Example 3:

3. Reader: Tyreke J., 8 years old, third grade, African American, Philadelphia.
   Text: My *blood* began to *boil*.
   Reading: My *boat* began to *bill*.

The readings *boat* for *blood* and *bill* for *boil* are clear errors. In both cases initial and final consonants are read correctly; the errors concern the initial cluster and the vowel pairs *oo* and *oi*. The second error *bill* for *boil* is in the semantic shadow of the first error. It seems clear that if *blood* were correctly decoded, and the reader knew the idiom involved, there would have been a higher likelihood of a correct reading of *boil*. In what follows, we will produce evidence to justify that inference.

Example 4 shows a potential error:

4. Reader: Filores J., 8 years old, third grade, African American, Philadelphia.
   Text: I *played* it cool and took a sip of my coke.
   Reading: I *play* it cool and took a sip of my coke.

The potential error *play* for *played* in Example 4 is a common type found in our data, and has a number of possible explanations. It may be a failure to decipher the past tense signal *-ed*, and indeed such readings of past tense forms as present tense are frequent. Conversely, it may represent a phonological deletion of the final /d/, although this is not as common for single consonants as for the second of two consonants in words like *served*. In any case, this potential error does not cast a strong semantic shadow: in Example 4, none of the nine words that follow the reading *play* are misread, and it therefore seems likely that the reader understood the sentence. The likelihood that the past tense meaning was understood is increased by the fact that *took*, the past tense form of *take*, is preserved in Example 4.

Example 5 shows a potential error of a different type.

5. Reader: Raheem G., 11, fourth grade, Latino who learned to read in English first, Philadelphia:
   Text: His *teeth* are as sharp as the edge of my *knife*.
   Reading: His *teef* are as sharp as the edge of my *knee*.

The potential error *teef* for *teeth* in Example 5 incorporates a well-known dialect feature of AAVE: the realization of syllable final *-th* as *-f* (Labov et al., 1968; Rickford, 1999). Members of the Philadelphia Latino community who have intimate contact with the Black community share many of these features (Poplack, 1978). It is probable that the reader understood the second word as "teeth." Yet, there remains a certain amount of doubt, because the reader may have decoded teeth as /tiyf/ but not made a firm connection with the meaning "teeth." In the semantic shadow of this potential error there is a clear reading error, *knee* for *knife*, which we suggest would be less likely if "teeth" had been understood. There are, of course, many other factors that may be responsible for this error, including familiarity with the use of *edge* in regard to a knife and a familiarity with the simile. The question remains, was this second reading error connected in any way with the initial deviation in pronunciation?

An 8-year-old student in the second grade read a sentence with three errors recorded as in Example 6 (dk means "don't know"):

6. Reader: Maleek N., 8, second grade, African American, Philadelphia
   Text: I *told* you all about *Ray* and his bad cat.
   Reading: I *tol'* you all about [dk] and has bad cat.

At first glance, it seems that the reading *tol'* is a phonological deletion, not a misunderstanding of *told* as "toll." In contrast, it is still possible that it represents an incomplete effort at decoding *told* and that the reader has not arrived at the meaning of "inform someone in the past." The likelihood that this is so is increased by two following errors on words that are relatively easy to decode, the proper name *Ray* and the function word *his*. In Example 6 there are two clear errors realized in the semantic shadow cast by the potential reading error *tol'*.

Potential error types identified

Homonym pairs like *son/sun* create a problem for the speller more than for the reader, because these words are homophones but not homographs. The problem is shared equally by reader and speller for homograph/homophones like *ring* "surround/sound out," *cool* "not warm/admirable," and *tire* "auto tire/fatigue." The main problem that we will confront here is the result of variations in the pronunciation of a given spelling that creates new homophones.

The simplification of final consonant clusters is a process that affects the speech of all users of English, although it occurs with higher frequency in nonstandard dialects (Guy, 1980; Labov, 1966, 1972). Speakers of nonstandard and standard dialects generally show the same patterns of simplification, but at different frequencies. As noted above, it has generally been agreed that it is important to distinguish reading errors from differences in pronunciation (Goodman, 1965; Labov, 1965). However, it has not been generally recognized that these dialect differences are potential errors. When a reader says /fayn/ for *find*, we may be dealing with a colloquial pronunciation of the right word, or a misreading that has identified the wrong word, *fine*.

Table 1. *Dialect types in the diagnostic reading text with orthographic and phonemic examples*

Type	Label	Defining Condition: Words With	Examples	Potential Error
a	_CC	Final homovoiced consonant clusters in base form	*Find /faynd/*	*Fine /fayn/*
b	_C+{d}	Final homovoiced clusters formed by addition of regular past tense suffix *-ed*	*Grabbed /græbd/* *Slipped /slipt/*	*Grab /græb/* *Slip /slip/*
c	_V+{d}	Regular past tense suffix *-ed* that does not form a cluster	*Started /startəd/* *Tried /trayd/*	*Start /start/* *Try /tray/*
d	ch_~sh_	Initial *ch-* or *sh-*	*Chips /tʃips/* *Shame /ʃeym/*	*Ships /ʃips/* *Chame /tʃeym/*
e	Pos{s}	Possessive suffix *-s*	*Ray's /reyz/*	*Ray /rey/*
f	Cop{s}	Contracted copula *'s*	*He's out /hiyzawt/*	*He out /hiyawt/*
g	Vbl{s}	Third singular verbal suffix *-s*	*He gets /hiygets/*	*He get /hiyget/*
h	Pl{s}	Regular plural suffix *-s*	*Cats /kæts/*	*Cat /kæt/*
i	IrregPast	Irregular past tense forms	*Gave /geyv/*	*Give /giv/*
j	br_~b-	Form *brought* or *bought*	*Brought /brɔt/*	*Bought /bɔt/*
k	Snuck	Form *sneaked*	*Sneaked /sniykt/*	*Snuck /sn∧k/*

Although consonant cluster simplification occurs in all spoken dialects, the higher frequencies in nonstandard dialects, particularly AAVE, made this a particularly important issue for efforts to raise reading levels in inner city, low income areas. Accordingly, our research project made consonant cluster simplification a central focus in testing as well as in intervention methods. The diagnostic text, *Ray's Cat Comes Back,* contains the following words with homovoiced clusters[4]: *told, old, find, kind, around, worst, thirst, spend, stand, hand, ground, last,* and *risk.*

Dialect types identified

In this report, we will focus on reading errors of those items that are particularly sensitive to differences between home language and standard English. A *dialect type* is defined as a phonological or grammatical feature that varies from standard English pronunciation by a reader's language background. We identified 11 such dialect types in the diagnostic text on the basis of error frequency, as shown in Table 1.

Type a leads to the confusion of simple words like *find* and *fine, mist* and *miss, rift* and *riff,* which can become homonyms through consonant cluster simplification.

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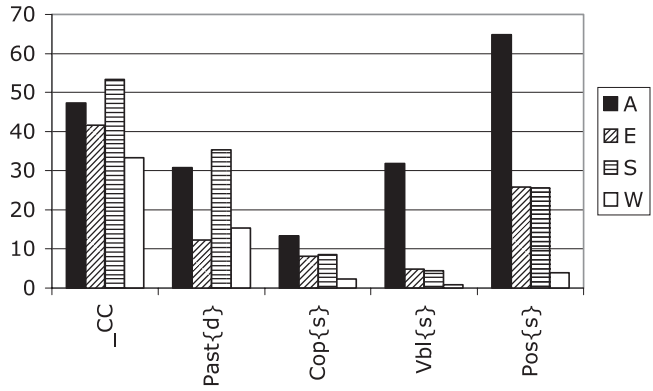

Figure 1. The percentage of absence of a final consonant for five variable types and four language/ethnic groups. A, African American; E, Latino English reader; S, Latino Spanish reader; W, Caucasian.

Type b involves the potential homonymy of *grab* and *grabbed, pull* and *pulled.* Here it is past tense information that may or may not be missing. Type c has the full syllable *-ed* after /t/ or /d/ as in *started*, or a single /d/ after stems that end with a vowel as in *tried*. Here it is less likely that the absence of *-d* in these cases is due to phonological reduction, but more likely because of a failure to decode the past tense information. Dialect Type d relates to potential errors common with Latino readers. There are regular reports that speakers of English with Spanish language backgrounds alternate the palatal affricate and fricative in *choose, chips, shame*, *shoe,* and so forth (Wald, 1981). The main tendency is to substitute *sh-* for *ch-*, but the reverse occurs as well. Therefore, it is an open question as to whether the reading "It's a *chame* . . ." represents a reading error or the reader's pronunciation of the correct word, *shame*.

Types e–g are forms of the suffix or clitic *-s*, which are frequently absent in AAVE (see Baugh, 1983; Labov et al., 1968, 1972; Rickford, 1999; Weldon, 1994; Wolfram, 1969). The grammar of AAVE does not include subject–verb agreement as marked by verbal *-s.* The *'s* marking possession between two nouns is regularly absent). In contrast, there is considerable variation in the *'s,* which marks the contracted form of the verb or auxiliary *is*. Type h, the plural suffix{s} is present much more frequently.[5] In Type h, we find that AAVE uses irregular past forms consistently, with some lexical deviations from the standard usage.

Our Latino subjects also show variation in Types a–h, but their distributions differ from AAVE (see Figure 1; see also Bayley, 1994; Fought, 2003; Santa Ana, 1992; Wolfram, 1974).

Item j bears on the tendency of speakers of AAVE to alternate *br-* and *b-* in the two words *brought* and *bought*, where *brought* may be pronounced with a single /b/ and *bought* with the two phonemes /br/.

Dialect Type k is added as a control item. In many American dialects, the word *sneaked* has a colloquial form *snuck*, and this form is common among the readers in our sample. It is evident that the reading *snuck* is not a potential error in the sense

Table 2. *Subjects by ethnic/language background and grade level (N = 627)*

Grade Level	Ethnic/Language Group: African American	Caucasian	Latino Spanish Reader	Latino English Reader	Total
2	36	30	39	46	151
3	71	44	71	81	267
4	48	34	76	51	209
Total	155	108	186	178	627

defined above but is instead a correct reading. In order for the reader to produce *snuck* he or she must decode *sneaked* accurately, locate the word that corresponds to the meaning "sneaked," and produce the phonological representation that we spell *snuck*. The semantic shadow produced by reading *snuck* should be equal to that cast by the correct reading "sneaked," that is, null.

Subjects

Four ethnic/language groups formed the subject pool for this study: African Americans, European Americans, Latinos who learned to read in English first, and Latinos who learned to read in Spanish first. Subjects were drawn from low-income schools in Philadelphia, Pennsylvania, Atlanta, Georgia, East Palo Alto, California (northern California), and Santa Ana and Long Beach, California (southern California). Six hundred twenty-seven students in Grades 2 through 4 were selected for this study. Table 2 displays the number of subjects by grade and ethnic/language group. One hundred fifty-five African American students, 108 Caucasian students, 186 Latino students who learned to read in Spanish first, and 178 Latino students who learned to read in English first were selected for this study. Of course, all are currently enrolled in English reading classes.

Measures

Students were selected for the study on the basis of scoring in the bottom third in reading proficiency on the Stanford Achievement Test Version 9. There were four measures used to determine students' proficiency levels on five reading subskills of decoding ability, sight word identification rate, vocabulary knowledge, passage comprehension rate, and fluency: Woodcock–Johnson 3 word attack subtest, Woodcock–Johnson 3 word identification subtest, Gray's Oral Reading Test of Comprehension, and Gray's Oral Reading Test of Fluency. Means, medians, modes, and standard deviations for the percentile scores of the population as a whole are given in Table 3.

Spontaneous speech patterns of the subjects

Five of the dialect types in Table 1 are related to the range of variation found in AAVE and Latino English as reported in previous sociolinguistic studies (Labov,

Table 3. *Subjects' mean percentile scores on standardized reading subskill proficiency measures (N = 627)*

Reading Subskill Test	Mean	Median	Mode	*SD*
WJ 3 word attack	28	25	25	17.7
WJ 3 word ID	21	19	17	15.4
GORT				
Comprehension	23	16	16	19.1
Fluency	13	5	5	15.1

Note: WJ3, Woodcock–Johnson 3 word identification subtest; GORT, Gray's Oral Reading Test of Fluency.

1972; Labov et al., 1968; Rickford, 1999; Wolfram, 1974). The probability that a given potential error was a true reading error or a difference in pronunciation is related to the likelihood that a given form would be realized in spontaneous speech.

Most of the studies of AAVE cited above were based on the speech of adults and adolescents. To determine the frequency of presence or absence for these linguistic variables in the spontaneous speech of our subjects, 287 were interviewed by sociolinguistic techniques. The methods used were based on methods of obtaining narratives of personal experience that have been found to approach closely the vernacular style used in everyday life with family and intimate peers (Labov, 1972, 1984). After reading a story about a boy who got into trouble by not obeying his parents, subjects were asked questions such as

- When was the last time you got into trouble?
- Did you ever get blamed for something you didn't do?
- Did you ever get into a fight with somebody bigger than you?

The interviews were transcribed and coded for the realization of linguistic variables, including those described as dialect Types a, b, e, f, and g, which all involve the presence or absence of a final consonant. Figure 1 shows the percent absence of this final consonant for these five dialect types for the four language/ethnic groups of Table 2. Despite the fact that the recordings were made in the school environment, the results reflect the patterns found in community studies outside of the school.

The levels of variation found for dialect Type a, consonant cluster simplification, show a high degree of absence for all groups, with Latinos who learned to read in Spanish first at the highest level, African Americans next, and Caucasians lower, with only about one-third absent. As in previous studies of adults, all groups show a lower frequency of absence for Type b, past tense clusters than for Type a. The contracted copula, Type f, shows much lower levels of absence, with African Americans in the lead. The last two variables (e and g) display a much sharper difference between African Americans and others. Absence of verbal (s) is almost entirely confined to African Americans. Absence of possessive (s) is over 60% for

African Americans, at a much lower level for Latinos, and almost nonexistent for Whites. These patterns of absence and presence in spontaneous speech will play a crucial role in the interpretation of reading errors to follow.

Measuring reading errors. All errors recorded for the diagnostic reading were entered into the RX computer program. Research assistants who entered the errors were trained to include any departure of oral reading from the standard pronunciation of the written text, using an adaptation of conventional orthography that could be translated unambiguously into a phonemic representation.[6] Transcribers did not distinguish clear from potential errors; this was done automatically by the RX program (see below). All diagnostic readings were recorded, and all error entries were checked and corrected by relistening to the recordings.

Data analysis procedures

Measuring semantic shadows with the RX program. The examples of errors and potential errors given above show that no clear resolution of the problem of deciding what is a reading error can be made from the study of individual cases. The probabilities of following errors are established by readings of the diagnostic text (see Appendix A) by 627 subjects in the first year of this study. To measure semantic shadows for a given dialect type, the RX program performed the following functions:

1. Identify dialect items: mark each dialect item in the text as a site of potential errors according to its dialect type.[7]
2. Measure error span: count the number of words from the dialect item to the end of the clause that marks the completion of the major semantic unit in which the word is interpreted.
3. Convert orthographic records of errors to phonemic representation.
4. Classify each phonemic error string as a potential error if it represents a form known to occur for that dialect item in spontaneous speech; if not, classify as a clear error.
5. Enumerate following errors: count the number of errors in the error span that follows each dialect item.
6. Calculate means: obtain the average of following errors for correct readings, potential errors, and clear errors by error type and characteristics of the subject population.
7. Establish significance: calculate chi-square values for correct readings versus clear errors, correct readings versus potential errors, and potential errors versus clear errors.

The decision in Step 2 to measure error span to the end of the clause was designed to maximize the semantic effects of error as wrong lexical identification. Although some semantic interference will continue beyond the clause, the clause is the fundamental unit in which parts of speech are identified and semantic roles assigned.

The crucial part of this procedure is the identification of potential and clear errors in Steps 3 and 4, which translates the orthographic representation of the error into a phonemic representation, and matches this with the expected phonemic version of the graphemic text. When the mismatch corresponds to one of the colloquial representations known to occur in spontaneous speech (see Table 1 and Figure 1), it is marked as a potential error. If not, it is recognized as a clear error. This is quite straightforward in the case of *Ray's /reyz/*. An error recorded as *Ray /rey/* is classified as a potential error, that is, the potential loss of the semantic information of possession under Type e. An error recorded as *rain* /reyn/ would be a clear error: a wrong word identification and loss of information on possession. An error entry *try* for *tried* requires some manipulation of graphemic to phonemic representation before it can be recognized as a potential error of Type c: /tray/ for /trayd/, with failure to articulate the final phoneme /d/.

RESULTS

Confirming the SSH by the differential error rate

The strategy for answering the first research question requires support for the hypothesis that the probability of following errors is greater for clear errors than for correct readings. Figure 2 shows the mean frequencies of following errors by dialect type for dialect items that were clear errors, and for those items that were read correctly. Our initial analysis of errors by dialect types looks at all language/ethnic groups together, because it is based on properties of the reading process that are common to all. The difference between following error frequencies for clear errors and for correct readings will be referred to as the *differential error* rate. This difference is significant at $p < .0001$ for all dialect types.

This result is predicted by the SSH. The average differential error rate is 2.07, with a standard deviation of only 0.22. The two measures rise and fall together, with an r correlation of .89. However, the frequency of the errors following the dialect items can be attributed to two distinct causes. Following errors can be the result of semantic shadows: the further consequences of failing to interpret correctly the dialect item. In contrast, it is clear that poor readers will make more errors in both cases, and better readers will make fewer errors. The increase in errors following errors may not be a property of each reader, but a way of differentiating among readers. This possibility can be tested by calculating the mean differential error rate for each individual. There will be considerable variation, because the quantity of data varies considerably depending on language background and reading level. However, if the differential error rates of Figure 1 are attributable to differences in individual skills, the mean ratio should fall sharply when we control for individual differences.

Figure 3 is a scattergram showing the distribution of the mean differential error rate for the 627 individual subjects. Only 17 subjects show a differential error rate below zero. The tendency for points to lie above the diagonal is overwhelming. Thus, the differential error rate cannot be attributed to differences among individuals: it is a property of the population as a whole.

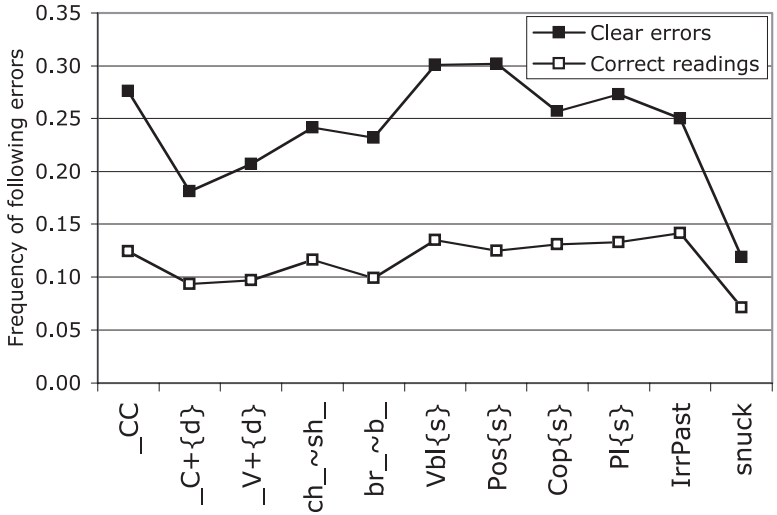

Figure 2. The frequency of following errors for clear errors and correct readings of dialect items for all subjects by dialect type ($n = 627$).

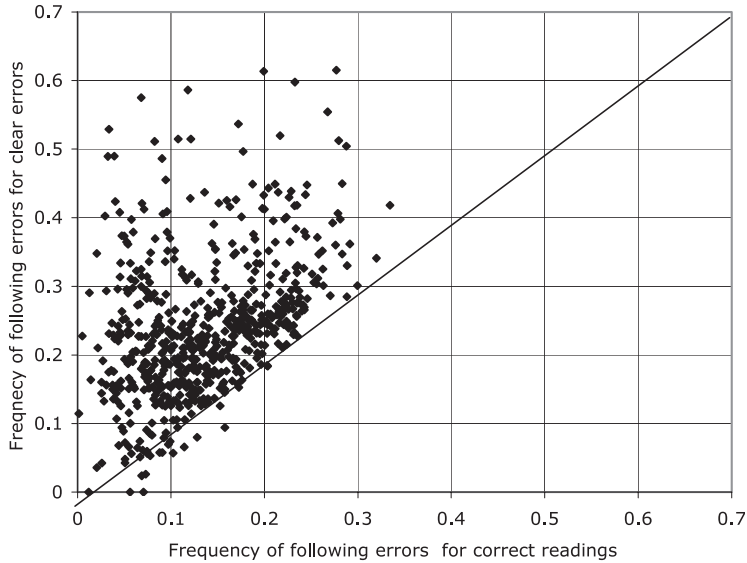

Figure 3. The frequency of errors following clear errors versus frequency of errors following correct readings for 627 subjects.

We can now use differential error rates of clear errors and correct reading to attack the second research question. Given a potential error, how can we determine the probability that it is a wrong identification of the intended word or merely a different oral realization of the intended word? We can answer this question for

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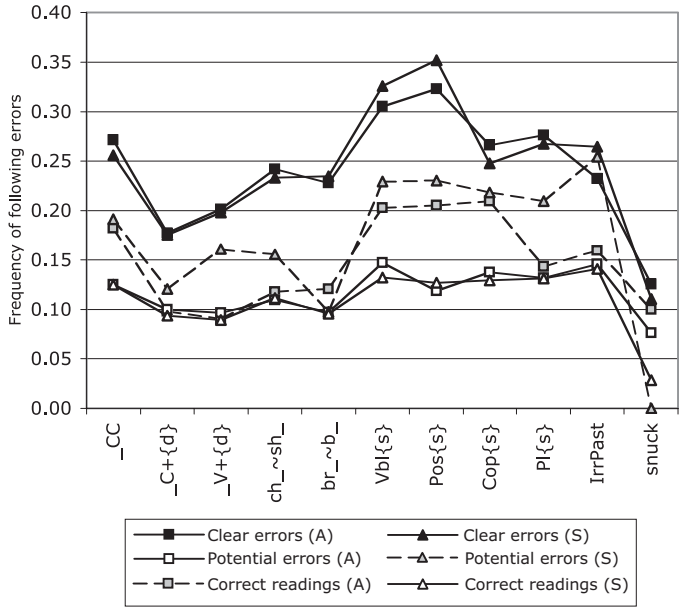

Figure 4. The frequency of following errors for correct readings, potential errors, and clear errors in readings of dialect items for 155 African Americans (A) and 186 Latino subjects who learned to read in Spanish first (S).

any given dialect type by determining whether the following error rate resembles that of clear errors, or of correct readings, or is intermediate (significantly different from both).

Figure 4 adds the frequencies of following errors for the items of interest, which are the potential errors (dashed lines). Data are given for two groups of subjects: African Americans (A) and Latinos who learned to read in Spanish first (S). The latter is the group with the strongest Spanish language influence; many of these subjects were born in Mexico and were strongly dominant in Spanish.

The frequencies of following errors show a remarkable similarity in the values for both clear errors and for correct readings for the two groups. The Pearson *r* correlations are .94 for correct readings and .94 for clear errors. A much wider range of variation is seen for the potential errors, where the *r* correlation is only .75. This is partly the result of sample size: the pool of tokens of potential errors is much smaller than that for correct and clear errors. However, the sample size does not account for the opposing patterns of the potential errors for the two groups.

Following the course of the dashed lines from left to right in Figure 4, one can see that for Group A (gray squares) and Group S (gray triangles) the potential errors for the _CC type are intermediate, whereas for the past tense clusters _C+{d} they are closer to correct readings. At this point, the potential errors for African Americans are truly identical to correct readings, a pattern that continues for the three following phonological variables. Group S is quite different: they register

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Table 4. *Identification of potential error status by language/ethnic group and dialect type*

Error Type	Example	AA	EA	LS	LE
– t, d deletion					
Base clusters _CC	Last	I	C	I	C
Reg. past clusters _C+{d}	Passed	C	C	I	I
Reg. past, no cluster _V+{D}	Started	C		I	C
Other phonological					
ch_ ~ sh_	Chip	C		C	C
br_ ~ b	Brought	C	I	C	C
Grammatical inflections					
Possessive {s}	Ray's	I	E	E	I
Verbal {s}	Knows	I	E	E	E
Copula {s}	That's	I	E	E	E
Plural {s}	Cents	C		E	E
Irregular past	Gave	C	I	E	E

Note: AA, African American; EA, European American; LS, Latinos who learned to read in Spanish first; LE, Latinos who learned to read in English first; C, potential errors equivalent to correct readings; E, potential errors equivalent to clear errors; I, potential errors intermediate between correct readings and clear errors.

a much higher following error frequency. For the three following grammatical categories, Groups A and S both show close, intermediate values; but for the next group, the plural, they diverge sharply. When the African American readers fail to realize a plural /s/ in oral reading, this produces no more disturbance in the following reading than if they do pronounce it; but for the Latino (Spanish) group, not pronouncing plural {s} is associated with a high frequency of following errors. The contrast of Group A to Group S is even more pronounced with irregular past types of potential errors: the Group S value is just like clear errors, and the Group A value like correct reading. In other words, the wide variety of irregular past forms produced by African Americans do not seem to be associated with a failure to grasp the intended meaning of the standard text, whereas the Latino (Spanish) group may not be familiar with many irregular past forms of standard English, and fail in the reading process as a consequence. (The values for *snuck* are not dependable for Group S, because they do not use this form and are therefore omitted from the table.[8])

Table 4 provides the answer to the third research question, showing the status of potential error types by language or ethnic group and dialect type. To facilitate this comparison, we will use the following abbreviations for the relations of the frequencies of clear errors, correct readings, and potential errors: "=" indicates "not significantly different from" and "≠" indicates "is significantly different from" at $p < .05$. Blanks are cases where the data are insufficient to be significantly different from either.

C potential errors = correct readings, ≠ clear errors
E potential errors ≠ correct readings, = clear errors
I potential errors ≠ correct readings, ≠ clear errors

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An immediate conclusion to be drawn from Table 4 is that African Americans are different from all others. For them, 6 of the 10 dialect types are equivalent to correct readings and none are equivalent to clear errors. African Americans are the most likely to be reading correctly when they deviate from the printed text, and Latinos dominant in Spanish are most likely to be reading incorrectly when their oral reading shows similar deviations from the printed form.

The relation of reading errors to speech

Many of the differences among groups in Table 4 are related to the differences in the patterns of spontaneous speech shown in Figure 1. Dialect types identified in the previous section correspond to linguistic variables in the study of spontaneous speech and the potential errors are those that may have been produced as nonstandard variants of these variables. Differences across dialect types and dialect groups in Table 4 may be related to (a) the frequency of the nonstandard variant and (b) the grammatical status of the variable. The higher the proportion of a nonstandard variant in spontaneous speech, the more likely it is that the potential error is an instance of that variant. If a given group rarely shows a nonstandard variant in the realization of a given word in speech, it is unlikely that the potential error is an instance of such variation.

In Figure 1, the African American (AA) group clearly leads the other three groups in the absence of verbal {s}, copula {s}, and possessive {s}. In Table 4, the clearest difference among groups appears in these three categories, where potential errors for the European American (EA), Latinos who learned to read in Spanish first (LS), and Latinos who learned to read in English first (LE) groups are equivalent to clear errors (E),[9] whereas values for the AA group are categorized as intermediate (I), which is significantly different from clear errors. For six other cells in Table 4, African American readers' ratings indicate that potential errors of these types are semantically equivalent to correct reading (C), which are differences in the linguistic realization of oral reading rather than the selection of a wrong word.

The significance of grammatical constraints on consonant cluster simplification

The overall frequency of the linguistic variant does not alone determine the probability of it being a correct reading. Linguistic variables are defined by both invariant conditions and variable constraints. One of the most important constraints on consonant cluster simplification is that past tense clusters are simplified much less often than base clusters. In all previous studies of White and African American speakers, the final /t/ in *passed* or *missed* is much less likely to be deleted than the /t/ in *past* or *mist*. In the same way, the final /d/ in *rolled* is much less likely to be deleted than the /d/ in *cold* (Guy, 1980; Labov, 1972).

Figure 1 showed that the Latino (Spanish) group shares with the African American group a high frequency of absence of the past tense suffix {d}.[10] Yet the two groups differ in regard to the likelihood that a missing /t, d/ in *missed* or *rolled* is a reading error: for African Americans the absence of the sound representing *-ed*

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is equivalent to a correct reading (C), and for Latino (Spanish) it is intermediate (I). The difference here corresponds to differences in the recognition of the past tense in the underlying grammars for the two groups.

The three blank cells for the European American group in Table 4 correspond to dialect types that hardly occur in their speech at all. However, Figure 1 shows small percentages of potential errors for Whites with the three common {s} suffixes: possessive, verbal, and copula. These are all equivalent to clear errors in Table 4. In contrast, the simplification of base clusters and past tense clusters does occur at a moderate frequency in the speech of Whites and corresponds to correct readings in Table 4.

A second major conclusion from Table 4 is that phonological features cast semantic shadows that are different from grammatical features. The concentration of E cells in the grammatical area is notable: there are none in the two phonological sections and, excluding the African American group, 12 of the 15 grammatical cells are equivalent to clear errors. There are two different interpretations of this. For Whites, their omission of the {s} suffixes is not a feature of speech and therefore must represent a misreading.[11] For the two Latino groups the reverse situation holds. They frequently omit the {s} suffixes in speech; but when they do so, it is likely to represent a limitation in their grasp of the significance of these grammatical signals in the English language.

DISCUSSION

We can sum up the relation of potential errors in reading to speech in the following generalizations:

1. A potential error is likely to be equivalent to a correct reading in its effect upon following errors when it corresponds to a linguistic variable that is frequently deleted in speech under regular and systematic conditions.
2. A potential error is likely to be equivalent to a clear error in its effect upon following errors when (a) it corresponds to a linguistic variable that is sporadically distributed across the population in speech and (b) it does not correspond to any variation in the speech pattern of a group.

The conclusions to be drawn from the study of following error frequencies do not bear upon any individual utterance. Neither do the data bear upon the performance of individual speakers, because for most dialect types, the data are quite limited for any one subject. The information drawn from Table 4 applies to groups of struggling readers with a common dialect or language background, information that can serve as a basis for instructional methods and a pedagogical focus.

The pedagogical implications of these findings are clear for both Latino groups: those who learned to read in Spanish first and those who learned to read in English first. Direct instruction on these particular grammatical patterns of English will be helpful in improving their reading competence. The situation is not as clear for African Americans because the treatment of the first three {s} suffixes was intermediate, but it is evident that some absence of the verbal, possessive, and copula {s} in reading is the result of misinterpretation of the intended meaning.

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The struggling readers who were tested in this study read slowly, with much hesitation, and with little tendency to group words into phrases. It often seems that they are decoding words individually, with no effort to assemble them into meaningful propositions. One could assume that this observed lack of proficiency in decoding and fluency rates would explain the students' failure to derive meaning from text that follows a difference in the pronunciation of the grammatical variables studied. Yet, the SSH implies that this may not be the case. The semantic shadows that are the focus of this report do not represent difficulties in decoding individual words; they instead represent the interference of a previous decoding problem with the use of context to help identify and integrate the following words into the sentence. We are then measuring the consequences of decoding errors for the syntactic and semantic integration of phrases and sentences. An originating error—potential or clear—removes contextual information that would have been helpful in decoding the following text. It may supply in addition misleading information that leads the reader to further errors. Thus, a reading error—clear or potential—is a natural experiment that yields information on the role of context in decoding. In any case, the semantic shadows that provide the basic data for this study would not exist if children were decoding the text one word at a time in the literal sense.

From the outset, the study of reading errors confronted us with many unanswered questions about what should be corrected and what should be taught in order to advance levels of achievement of struggling readers. The many differences between AAVE grammar and the Standard English of reading texts were reflected in the absence of final inflections in oral reading. At first glance, these suffixes seem of minor importance compared to knowledge of the silent-e rule, which dictates vowel length for a sizeable part of the vocabulary. Even if we allow that the omission of the /s/ in *runs* or the omission of the /d/ in *served* is a failure to decode part of the text, the question remains as to how often the information provided by these grammatical signals would be essential to the success of a later effort to answer questions about the text.

The total number of potential errors for the 627 subjects studied here was 3,545. This means that the average reader made 5 such potential errors. This is not negligible, because the mean number of clear errors made per reader is 30. That is, 1 out of every 7 errors is a potential error that needs further definition.

These results confirm the early suggestion that too much attention paid to the articulation of final consonant clusters would be self-defeating and distracting in the teaching of reading, because whether or not they appear intact in oral reading is a matter of pronunciation that has little to do with the task of reading: comprehension of the written text (Labov, 1965). What is surprising in these findings is that the same consideration extends to the clusters formed by the {d} suffix as in *passed*, and the {d} suffixes that do not form clusters, as in *tried* and *started*. This indicates that at least for the majority of African American struggling readers the past tense {d} suffix is well established as an underlying form, and whether it is pronounced is not a material issue for the reading process. Just the opposite must be said for the possessive {s} suffix.

In this sense, the struggling African American and European American readers form the main stream of the reading process as we have been studying it. In this case, there is a large minority of readers who do not have the same underlying forms

in their mental lexicon. As Tables 3 and 4 show, this is particularly true for Latinos who have learned to read in Spanish first. When these readers pronounce *opened* as *open*, it is not because they have retrieved the original full form, understood it, and reproduced it in their colloquial version. It is instead because the {d} remains a partly known object, whose significance is not clear, and failure to decode it may lead to further consequences down the line.

CONCLUSION

The implications of these findings as to what should be taught to whom and when are clear. Better understanding of the possessive, copula, and irregular past tense are important for all struggling readers. Direct instruction on the meaning of these signals should help to advance reading levels.

This report is an effort to develop the systematic study of how phonological decoding interacts with context and the construction of meaningful discourse. The concept of a semantic shadow provides a methodological tool that should be helpful in further specifying what a grammatical error is. What lies within that shadow must be the focus of further inquiry.

APPENDIX A
Diagnostic reading "Ray and His Cat Come Back"

Dialect types that are not sentence final are shown in bold.

I **told** you all about Ray and his bad cat.
I **didn't** know that they were going to come back.
On Friday, I was in Aunt **Cindy's** store,
and Ray was with the same **old** cat that I **saw** before.
Ray and his cat were a pain in the rear.
Ray **sneaked** up on Matt and put the cat in his ear.
Matt **flew** about a mile in the air.
Then Ray **said**, "Matt, my cat **wants** a treat!"
Ray **grabbed** Matt's **chips** and let his cat eat.
The cat **took** one bite and let out a wail.
Ray **said**, "Darn, those **chips** are stale!
It's a **shame** that you **went** and **bought** them on sale.
They **taste** like the food **that's served** in a jail."
The cat spit out the **chips** and **jumped** in **Ray's** coat.
Poor little Matt had his heart in his throat.
He was standing up straight and **tried** not to shake.
It was easy to see that it was a bit of a fake.
Matt **didn't** reach up to **Ray's chin**.
He had to **find** a way out of the fix he was in.
Ray was built **kind** of big, not **just** tall, you know, wide.
Matt **jumped** on his bike and **went** for a ride.
Next Ray **turned around**, and was looking at me.
My blood **began** to boil, I thought, "**Just** who is he?"
But I **played** it cool and took a gulp of my coke.
Ray **came** by and **opened** his coat.

He said, "You may be bad, but I am the worst,
and my tough little cat has a super class thirst.
Only one thing will cure it, a **taste** of your coke."
I **said**, "Hey, Ray, **that's** a very rich joke.
But you are on the wrong track, my man!
Drinking with **cats** is not in my plan,
But I don't choose to listen to your cat moan.
Here's a coin for it to buy **its** own."
I **pulled** out of my pocket a rusty **old** dime.
said, "Go **spend** it, cat, if you've got the time."
Ray **stared** at me and said, "Ten **cents**?
You really think that I am that dense?
Now I'm going to show you **just** where I stand."
He **snatched** the can right out of my hand.
Then **poured** the coke on the ground
and **said**, "Cat, **it's** time to get down."
The cat **slipped** down and **started** to drink.
I **brought** my knee back, and **kicked** that **old** can
right at the cat and **told** it to SCRAM!
But the cat **rushed** back to try to score.
I said to Ray, "Oh, your **cat's** here for more?"
This was the **last**, the very **last** straw.
I **gave** a whistle and **opened** the door.
Ray **screamed**, "Wait! **What's** that coming at me?"
I said, "**That's** my dog, Black, now you will see.
His teeth are as **sharp** as the edge of a knife,
Your cat **stays** here at the **risk** of his life.
Don't worry, Ray, **it's** no big deal.
I'll count to three and Black has his meal."
When I got to two, Ray and his cat ran.
Ray certainly **fell** for my new cat plan.
Hey, Black doesn't eat **cats**, not even one.
He **just likes** to growl and watch them run.

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NOTES

1. All subjects were enrolled in schools in which a majority of students qualified for free lunch under Title I.
2. For more practiced readers, the shadow may be cast upon preceding text.
3. The oral readings were all recorded. The notations of errors are entered by hand on a double-spaced version of the text at the time of reading and then checked by a systematic sampling of the recordings.
4. Homovoiced clusters, which have the same type of voicing throughout, are simplified far more often than heterovoiced clusters as in *bent* and *belt.*

5. The exceptions are nouns of measure such as *cent, dollar,* and *pound*. The plural *-s* in *cents* in the diagnostic reading is not counted in the analysis of plurals.
6. For example, if the /t/ in *caught* was not pronounced, error transcribers were instructed to enter "caw." If a /t/ was inserted after the /s/ in *sign,* transcribers entered "stine."
7. A *dialect item* is a token of a dialect type as a particular occurrence in the text.
8. The oral reading of *snuck* is a deviation from the printed *sneaked.* Because it correctly captures the meaning of *sneaked*, it should behave like a correct reading. The frequency of following errors for *snuck* is 0.08, which is not significantly different from the 0.07 figure for other correct readings and is significantly different from the level for true errors at 0.12 ($\chi^2 = 17.8$, $p < .001$). The clear case of *sneaked/snuck* therefore confirms the logic of this analysis for the more problematic cases.
9. The exception is the E group for Pos{s}.
10. This is a combined measure of absence of {d} in both consonant cluster and single consonant situations.
11. The notation used here follows the following linguistic convention: [ ] represent phonetic sounds, / / represent phonemes, and { } represent morphemes, suffixes that carry meaningful information.

REFERENCES

Baratz, S. S., & Baratz, J. C. (1970). Early childhood intervention: The Social Science Base of Institutional Racism. *Harvard Educational Review, 40*, 29–50.

Baugh, J. (1983). *Black street speech: Its history, structure and survival*. Austin, TX: University of Texas Press.

Bayley, R. (1994). Consonant cluster reduction in Tejano English. *Language Variation and Change, 6*, 303–326.

Brown, J., Goodman, K., & Marek, A. (Eds.). (1996). *Studies in miscue analysis: An annotated bibliography*. Newark, DE: International Reading Association.

Buck, J., & Torgerson, J. (2003). *The relationship between performance on a measure of oral reading fluency and performance on the Florida Comprehensive Assessment Test* (Florida Center for Reading Research Technical Report No. 1). Tallahassee, FL: Florida Center for Reading Research.

Chall, J. (1996). *Stages of reading development* (2nd ed.). Fort Worth, TX: Harcourt Brace.

Filippatou, D. N. (2004). Miscue analysis: A classification and critique of research. *Psychology: Journal of the Hellenic Psychological Society, 11*, 319–340.

Fought, C. (2003). *Chicano English in context*. New York: Palgrave Macmillan.

Fuchs, L. S., Fuchs, D., & Compton, D. L. (2004). Monitoring early reading development in first grade: Word identification fluency versus nonsense word fluency. *Exceptional Children, 71*, 7–21.

Fuchs, L. S., Fuchs, D., Hosp, M. K., & Jenkins, J. R. (2001). Oral reading fluency as an indicator of reading competence: A theoretical, empirical, and historical analysis. *Scientific Studies of Reading, 5*, 239–256.

Fuchs, L. S., Fuchs, D., & Maxwell, L. (1988). The validity of informal reading comprehension measures. *Remedial and Special Education, 9*, 20–28.

Good III, R. H., Simmons, D. C., & Kame'enui, E. J. (2001). The importance and decision-making utility of fluency-based indicators of foundational reading skills for third-grade high-stakes outcomes. *Scientific Studies of Reading, 5*, 257–288.

Goodman, K. (1969). Analysis of oral reading miscues: Applied psycholinguistics. In F. Gollasch (Ed.), *Language and literacy: The selected writings of Kenneth Goodman* (Vol. 1, pp. 123–134). Boston: Routledge & Kegan.

Goodman, K. S. (1965). Dialect barriers to reading comprehension. *Elementary English, 42*, 853–860.

Goodman, K. S. (1989). Whole-language research: Foundations and development. *Elementary School Journal, 90*, 207–221.

Guy, G. (1980). Variation in the group and the individual: The case of final stop deletion. In W. Labov (Ed.), *Locating language in time and space* (pp. 1–36). New York: Academic Press.
Labov, W. (1965). Linguistic research on the non-standard English of Negro children. In A. Dore (Ed.), *Problems and practices in the New York City schools* (pp. 110–117). New York: New York Society for the Experimental Study of Education.
Labov, W. (1966). Some sources of reading problems. In A. Frazier (Ed.), *New directions in elementary English* (pp. 140–167). Champaign, IL: National Council of Teachers of English.
Labov, W. (1972). *Language in the inner city*. Philadelphia, PA: University of Pennsylvania Press.
Labov, W. (1984). Field methods of the Project on Linguistic Change and Variation. In J. Baugh & J. Sherzer (Eds.), *Language in use* (pp. 28–53). Englewood Cliffs, NJ: Prentice–Hall.
Labov, W., & Baker, B. (2000). *The individualized reading manual*. Philadelphia, PA: University of Pennsylvania, Linguistics Laboratory.
Labov, W., Baker, B., Bullock, S., Ross, L., & Brown, M. (1998). *A graphemic–phonemic analysis of the reading errors of inner city children*. Philadelphia, PA: University of Pennsylvania, Linguistics Laboratory. Retrieved March 1, 1999, from http://www.ling.upenn.edu/~labov/papers/GAREC/GAREC.html
Labov, W., Cohen, P., Robins, C., & Lewis, J. (1968). *A study of the non-standard English of Negro and Puerto Rican speakers in New York City* (Cooperative Research Report No. 3288, Vols. 1 and 2). Philadelphia, PA: University of Pennsylvania, Linguistics Laboratory.
Laing, S. P. (2002). Miscue analysis in school age children. *American Journal of Speech–Language Pathology, 11*, 407–416.
Lyon, R. G., & Kameenui, E. J. (1998). *National Institute of Child Health and Human Development (NICHD) research supports the America Reads Challenge*. Retrieved January 6, 2005, from http://www.ed.gov/inits/americareads/nichd.html
O'Connor, R. E., White, A., & Swanson, L. (2007). Repeated reading versus continuous reading: Influences on reading fluency and comprehension. *Exceptional Children, 74*, 31–46.
Poplack, S. (1978). On dialect acquisition and communicative competence: The case of Puerto Rican Bilinguals. *Language in Society, 7*, 89–104.
Reidel, B. W. (2007). The relation between DIBELS, reading comprehension, and vocabulary in urban first-grade students. *Reading Research Quarterly, 42*, 546–562.
Rickford, J. (1999). *African American Vernacular English: Features and use, evolution, and educational implications*. Oxford: Blackwell.
Santa Ana, O. (1992). Chicano English evidence for the exponential hypothesis: A variable rule pervades lexical phonology. *Language Variation and Change, 4*, 275–288.
Schwanenflugel, P. J., Meisenger, E. B., Wisenbaker, J. M., Kuhn, M. R., Strauss, G. P., & Morris, R. D. (2006). Becoming a fluent and automatic reader in the early elementary years. *Reading Research Quarterly, 41*, 496–522.
Singleton, C. (2005). Dyslexia and oral reading errors. *Journal of Research in Reading, 28*, 4–14.
Stahl, S., & Heubach, K. (2005). Fluency oriented reading instruction. *Journal of Literary Research, 47*, 25–60.
Stanovich, K., Cunningham, A. E., & Freeman, 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.
Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21*, 360–407.
Stewart, W. A. (1970). Current issues in the use of Negro dialect in beginning reading texts. *Florida FL Reporter, 8*, 1.
Thomson, M. E. (1978). A psycholinguistic analysis of reading errors made by dyslexics and normal readers. *Journal of Research in Reading, 1*, 7–20. Published online November 1, 2005. Retrieved June 25, 2010, from http://www3.interscience.wiley.com/journal/119617766/abstract?CRETRY=1&SRETRY=0
Wald, B. (1981). Limitations on the variable rule applied to bilingual phonology: The unmerging of the voiceless palatal phonemes in the English of Mexican Americans in the Los Angeles area. In D. Sankoff & H. Cedergren (Eds.), *Variation omnibus*. Edmonton, AB: Linguistic Research.
Weldon, T. (1994). Variability in negation in African American Vernacular English. *Language Variation and Change, 6*, 359–397.

Wolfram, W. (1969). *A sociolinguistic description of Detroit Negro speech*. Arlington, VA: Center for Applied Linguistics.
Wolfram, W. (1974). *Sociolinguistic aspects of assimilation: Puerto Rican English in New York City*. Arlington, VA: Center for Applied Linguistics.