     LINGUISTIC INSIGHTS AND METHODS WERE APPLIED TO READING.
SIX HYPOTHESES WERE TESTED--(1) THAT EARLY READERS RECOGNIZE
WORDS IN CONTEXT WHICH THEY CANNOT RECOGNIZE IN LISTS, (2)
THAT THE ABILITY TO READ WITH NATURAL INTONATION IS RELATED
TO COMPREHENSION, (3) THAT REGRESSIONS IN READING ARE LARGELY
FOR THE PURPOSE OF IMPROVING COMPREHENSION, (4) THAT ERRORS
IN READING ARE CUED, (5) THAT THE ARTIFICIAL LANGUAGE IN
BASAL READERS CAUSES ERRORS BY MISCUING READERS, AND (6) THAT
IN RETELLING A STORY, CHILDREN ALTER LANGUAGE TO MAKE IT
SOUND MORE NATURAL. SUBJECTS WERE 100 RANDOMLY SELECTED
FIRST, SECOND, AND THIRD GRADERS IN MICHIGAN. MATERIALS WERE
A SEQUENCE OF STORIES SELECTED FROM THE BETTS READING SERIES.
WORD LISTS WERE MADE FROM THE STORIES. THE PROCEDURE CALLED
FOR CHILDREN TO READ THE GRADED WORD LIST AND THEN THE STORY
FROM WHICH THE WORDS WERE TAKEN. SUBJECTS RETOLD THE STORY
WHICH WAS TAPE RECORDED. MANY WORDS READ IN CONTEXT WERE NOT
READ FROM LISTS. SECOND AND THIRD GRADERS MADE ABOUT DOUBLE
THE NUMBER OF REGRESSIONS PER LINE READ AS DID FIRST GRADERS.
VERY FEW CHILDREN READ WITH NATURAL INTONATIONS. IN GENERAL,
IT APPEARS THAT INTONATION INFLUENCED COMPREHENSION. A
PRELIMINARY LINGUISTIC TAXONOMY OF CUES AND MISCUES IN
READING IS INCLUDED. THIS PAPER WAS PRESENTED AT THE AMERICAN
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A Linguistic Study of Cues and Miscues in Reading

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A Linguistic Investigation of the Reading of Primary Children
An exploratory study to implement a communicative theory of reading.

I. Purpose:

Reading is language. It is an active part of the communica-
tive process, just as listening is also an active aspect of
communication. Ultimately the purpose of this research is to
implement a communicative theory of reading, to provide empirical
evidence as to how young readers recreate meaning from the
writer's page. Immediately the purpose of this research is to
apply linguistic insights and methods to reading. The immediate
and ultimate purposes are inextricably combined however. The
theoretical base of the study generates hypotheses and provides
a vantage point for consideration of reading phenomena. It
provides a frame of reference for judging evidence, the signi-
ficance of which might be ignored without a theoretical base.
At the same time, the empirical data collected provides for
refinement of the theory. There has been considerable research
of high quality conducted on reading. The great weakness of
this research has been the lack of theoretical base which is
consistent with scientific knowledge of language. This study
then is at once a step toward the establishment of a sound
theory of reading and a venture into the application of the
theory to reading.

II. Theoretical Statement:

Language is essentially a code. In our literate society this
code is composed of sounds or letters. The sounds or letters are
arranged according to patterns of arbitrary units. The units of
language, phonemes or graphemes (at this point we choose to ignore
the issue of whether written language is itself a code or merely a
secondary representation of oral language) have no meaning in and
of themselves. But the users of the language can communicate
meaning by using the language in certain systematic ways. To
follow the code simile the speaker or writer may be considered an
encoder. He has a message to transmit. He possesses an inventory
of symbols and arranges them according to the system (or grammar)
of the code. The listener or reader, _actively_, utilizes his
ability to differentiate the symbols and his knowledge of the

system to reconstruct the message. Both the encoder and decoder
are so skillful in use of the code, however, that they are hardly
aware of the processes involved.

The success of the communicative transaction will depend on:

1. The knowledge of the language possessed by the speaker/
    writer and the listener/reader.

2. The skill in use of the language possessed by the speaker/
    writer and the listener/reader.

3. Noise on the communication channel. Noise is anything
    which may blur or distort the precise language of com-
    munication. (In reading, recognition of this factor is
    provided in the utilization of large clear print for
    early readers).

4. Agreement between speaker/writer and listener/reader on
    the language used. Differences in usage of a single
    language are generally termed dialects. Groups of users
    separated by time, space, social or economic class, interest,
    political barriers, or age may develop dialect differences.
    Further, each user of the language has his own idiolect,
    different in some respects from all other users.

5. Ability of the speaker/writer to reproduce language units
    and of the listener/reader to discern them. Physical
    impairment of speech producing elements or of sight or
    hearing may be factors. Previous conditioning to other
    languages may be another factor.

6. Ability of the listener/reader to comprehend the message.
    Reading does not take place without comprehension. If the
    message involves concepts or referents which are beyond
    the listener/reader or outside his base of knowledge and
    experience, he will not be able to read it no matter how
    much facility with the language he possesses.

Reconstructing the message of a language utterance involves
rapid automatic reaction not only to the significant differences
between phonemic or graphic symbols, but also to a number of
signal systems which provide cues to meaning. Systems of word
order, or word inflection, of function or structure words, and

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of intonation (stress, pitch, and juncture) play vital roles in cueing meaning in English. It is important to note that as we become more analytical, extracting elements from the flow of language, one or more of these systems of cues are eliminated. Such is the result of undue concern for sound/graph relationship or for word recogniation. The analytical techniques used in teaching may be producing letter sayers and word callers whose attention has been diverted from the available cues in the flow of language.

If reading is the process of recreating meaning from the written page, then the study of reading is the study of the means by which the reader recreates this meaning. This process involves the interaction of the reader with the language.

Language learning takes place as a result of communicative need. The learner has a need to communicate a desire or feeling to others and a need to understand the desires and feelings of others. He creates a language for himself out of the available language raw materials which exist in his social environment. In use he continually refines his idiolect, or personal language, to achieve more effective communication. In the process of re- finement, the child's idiolect eventually falls within the norms of acceptable language of his immediate social group.

In a literate society the child must not only be able to com- municate through speech. He needs also to understand the pre- served utterances which are conveyed by print or writing. To a somewhat lesser extent he must also be able to express himself in written form. Communicative need is as potent a force in the child's becoming literate as it is in all language learning.

Though the theoretical approach of this study applies to all reading, the main concern here is the reading of English by native speakers of the language. In the special case of the native speaker of a language learning to read his own language, it can be assumed that he brings to the task a high degree of sophistication in utilizing the cue systems. Even the six-year- old school beginner is a highly competent user of the oral language. Studies by Strickland and others at the University of Indiana have confirmed this ability.* The major problem which the native speaker encounters is that he is confronted with graphic rather than phonemic symbols. As indicated above he will of course bring any general language problems with him to his reading.

* Strickland, Ruth, The Language of Elementary School Children, Bulletin of the School of Education, Indiana University, Vol. 38, No. 4.

III. Hypothetical leads:

Because this study was a beginning, an exploration in the broad use of a communicative theory in understanding reading phenomena, no attempt was made to confine it to the testing of specific, tight hypotheses. But several hypotheses were involved in planning the strategy of the study:

1. Early readers are able to recognize many words in context which they cannot recognize in lists.

2. The ability to read with natural intonations is closely related to reading comprehension.

3. Regressions in reading are largely for the purpose of improving comprehension.

4. Errors are not haphazard in reading but are cued.

5. Artificial language in basal reading texts causes errors by miscueing readers.

6. In retelling a story which they have read, children alter the language to make it more natural sounding to them.

The study focused to a certain extent on the development of a linguistic taxonomy of errors made by readers in primary grades. This cataloguing is most related to (4) above.

IV. Subjects:

One hundred children in grades 1, 2 and 3 in the Barber School in Highland Park, Michigan, were the subjects of this study. Every second child on an alphabetical list by grade, room, and sex was called to a special room. This represented at least ten from each of three first and second grades and fifteen from each of two third grades. An equal number of boys and girls from each room participated.

V. Materials:

A sequence of stories were selected from the Betts Reading Series. These included one each from the second and third pre-primers, two from the primer and three well-spaced stories from books 1, 2-1, 2-2, 3-1, 3-2. With the publishers permission, the stories were dittoed on work sheets. The words from each

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story were listed according to first use as noun, verb, adjective, adverb, and function word. These word lists were also dittoed. The first grade material was typed on a primary typewriter, while the second and third grade material utilized elite type. The Betts' series was used because it is not familiar to the students in the study.

VI. Procedures

When the child came into the room he was greeted by a research assistant who attempted to put him at ease. The assistant asked him to read aloud word lists of a story at his grade level. If he missed many in the first column, he was given a list for an easier story. If he made no errors, he was given a more advanced story list. When an appropriate list was selected, one in which the child did not recognize a few words, the assistant followed this progress on a duplicate list, recording words which were missed or substitutions made. An attempt was also made to note any obvious word attacks and to record any comments the child made.

Next, the child was asked to read aloud the story from the text while the assistant followed on worksheets. The child's reading of the story was recorded on tape. The assistant circled omitted words and noted substitutions. The assistant also marked phrasing and mapped regressions and pauses. The child's reading of each paragraph was rated on a naturalness scale from 1 - 5. The assistants checked each child's reading a second time from the tape.

When each child finished reading, he was asked to close the book and retell the story. The retelling was also taped. Subsequently each child's retold story was typed verbatim without any punctuation. The typed transcriptions were checked against the tape by the assistants who marked the child's stresses.

VII. Analysis:

Errors: There has been a tendency in reading research to consider all errors of equal importance. This practice was at least partly due to the atheoretical nature of the research. Obviously, however, there are errors which matter and errors which don't. The theoretical base of this study provides a basic set of criteria for judging how much errors matter. The question can be asked, to what extent do errors hinder the effectiveness of communication? Is the reader's comprehension

disturbed by an error? Reading "I have this book" instead of "I have the book" is an error of almost no consequence. "He sat by the book" instead of "He sat by the brook" makes a lot more difference.

Careful application of our theoretical criteria for errors narrows the range of reading responses which can be considered errors since only those which make a difference fit the criteria. Further, some "errors" actually may improve comprehension. Such is the case when the child says, "I'm coming" for "I am coming." The child is recasting unnatural language as natural language.

When the child reads "There was a lot of goats" for "There were a lot of goats" he may not be erring, but instead may be reading his own dialect from the printed page. In that sense he has made a <u>correction</u> not an error.

For the purpose of this research, however, a broad definition of errors was used. Every deviation from a natural reading of the exact language of the book was considered an error. The errors collected by this procedure could then be judged as to significance. At the same time it was possible to look behind the errors and get at what was cueing them. At this point we need to examine all errors. In the future we may wish to speak of <u>significant errors</u>, those which make a difference.

<u>Word errors</u>: In reading, errors may involve individual words or they may involve larger units. Most recent research has focused on errors involving inability to recognize individual words. This inability may be evidenced by a complete stop in reading, by hesitancy followed by feeble or incorrect attempts at "getting" the words, or by the substitution of another word. Word recognition and "phonic" approaches to reading have placed heavy emphasis on "knowing" individual words so this focus on word errors is to be expected. Though our theoretical orientation indicates that words have no existence except in the language settings in which they are found, we can get some useful insights into the function of the systems of language cues by looking at word errors. The table below reports the word errors (omissions or substitutions) of our subjects. Inappropriate intonation is not included unless it results in a word being mistaken for another (as when the stress is put on the wrong syllable in a word like <u>desert</u>).

TABLE I

AVERAGE WORDS MISSED IN LIST AND IN STORY

	List Average	Also Missed in Story Average	Per Cent	Ratio
Grade 1	9.5	3.4	38%	2.8:1
Grade 2	20.1	5.1	25%	3.9:1
Grade 3	18.8	3.4	18%	5.5:1

TABLE II

ABILITY TO READ WORDS IN CONTEXT WHICH WERE MISSED ON LIST

	Less Than ½	More Than ½	More Than 2/3	More Than 3/4	More Than 4/5	N
Grade 1	11%	89%*	69%	49%	26%	35
Grade 2	3%	97%	81%	66%	50%	32
Grade 3	6%	94%	91%	76%	67%	33

*Cumulative per cents

Ability to read words in lists and in context. Table I indicates that the children in this study were able to read many words in context which they couldn't read from lists. Average first graders can read almost two out of three words in the story which they miss on the list. The average second grader missed only one-fourth of the words in the story which he has failed to recognize on the list. Third graders were able to get, in the stories, all but 18% of the words which they did not know in the list.

Another view of this phenomenon is provided in Table II. All but a handful of children in each grade got at least half of the words they missed on this list right in the story. The ability to use contextual cues appears to improve markedly from grade to grade. Two-thirds of the first graders got at least two-thirds of their list errors right in reading the story. Two-thirds of the second graders got better than three out of four list errors right. The comparable number of third graders were able to get better than four out of five right.

It should be remembered that the number of words children missed on the word lists was controlled. The children were given lists from successively more advanced stories until they missed several words. The relative difficulty of the material each child had to read was kept constant at least on this one dimension. This makes even more remarkable the consistently improving ability of children to read words in stories which they cannot read in lists. This ability can only be attributed to the fact that there are many more cues to each word when it occurs in a story. Sometimes the child does not "get" the word the first time it occurs, but each time he meets it he finds a new set of cues; position, inflection, associated functional words, the referential meanings of nearby words, and the general meaning of the larger unit in which the word occurs. These he uses to zero in on the right word. Often this process is so natural that the child appears unaware he has read a word which he previously could not get.

TABLE III

TOTAL ERRORS AND SUBSTITUTION ERRORS ON LISTS

	List Errors Average	Included Substitutions Average	Per Cent	Ratio
Grade 1	9.5	4.9	52%	1.9:1
Grade 2	20.1	11.5	57%	1.7:1
Grade 3	18.1	14.3	79%	1.3:1

While children are becoming increasingly efficient users of contextual cues, their use of "word attack skills" also is increasing. Here we define word attack skills as the use of cues within words and of learning strategies which involve specific responses to these cues. Table III illustrates this. Whereas only slightly more than half the list errors of first graders involve misreading or substituting an incorrect word for the right one, over three-fourths of the errors of third graders are substitutions. First graders are prone to not attempt a word or say "I don't know that word." Third graders are much more likely to attack each word. The willingness of children to try to figure out new words is of course commendable. Use of word attack skills, however, is obviously not always dependable. When these skills are carried over to attacking new words in stories they may actually be producing a negative effect. Children may be ignoring contextual cues in favor of cues within words.

TABLE IV

ONE-TIME SUBSTITUTIONS FOR KNOWN WORDS IN STORIES

	Average Substitutions	Average Lines Read	Substitutions Per Line Read
Grade 1	3.7	50.2	.074
Grade 2	14.9	126.2	.118
Grade 3	16.9	118.7	.142

Table IV shows another word error phenomenon. Children virtually never consistently missed a word in reading the story which they got right on the list, but they often substituted incorrect words for previously known words in single occurences. Three potential explanations may be: 1. The overuse of word attack skills to the exclusion of contextual ones. 2. Inconsistency between the structure, vocabulary or other aspects of the book language and the previous language experience of the reader. 3. Ineffective use of contextual cues. Whatever the reasons, it can be seen from Table IV that there was greater incidence of this type of error per line read among the third grade children than among the second graders. The latter rate of such errors considerably exceeds that of first graders.

Regressions: When a child missed a word on a list, unless he corrected it immediately he seldom ever went back. In reading the story, however, children frequently repeated words or groups of words, almost always to make a correction. Regressions themselves, then, were not errors but attempts (usually but not always successful) to correct prior errors.

As Table V indicates, on all three grade levels the number of regressions were almost evenly divided between word and phrase repeating. Most word regressions were immediate corrections of incorrect word substitutions. Second and third graders increasingly made use of word regressions to change the intonation of words.

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TABLE V

REGRESSIONS IN READING

	First Grade		Second Grade		Third Grade	
	Per Child	Per Line Read	Per Child	Per Line Read	Per Child	Per Line Read
Word Only						
To correct word	2.4	.048	10.11	.090	10.30	.087
To correct intonation on word	.09	.002	.49	.004	1.42	.012
Total	2.49	.050	10.60	.094	11.72	.099
Phrase *						
To correct word by repeating phrase	1.54	.031	5.77	.052	7.54	.061
To rephrase	.29	.006	1.97	.018	1.03	.009
To change intonation	.52	.011	2.83	.026	2.76	.023
Total	2.35	.048	10.57	.096	11.33	.093

Regressions which involve repeating phrases may be of three types:

1. Repeating a group of words to include a correct word rather than a substitute.

2. Repeating a group of words to rephrase or regroup them.

3. Repeating a group of words to change one or more aspects of the intonation.

* For these purposes a phrase is considered any two or more words.

Since intonation includes stress, pitch and juncture, the latter two purposes are not mutually exclusive. Rephrasing always involves some change in intonations; there is always a juncture change and frequently there are changes in pitch and stress. In this study regressions were arbitrarily listed in the third category above if they involved changed intonation without rephrasing.

It is perhaps surprising to note that second and third graders made about double the number of regressions per line read as did first graders. They appeared, therefore, to be more responsive to subsequent cues in reading.

Regressions seem to function in the child's reading about like this: The child reads along and makes an error. If the error is inconsistent with the previous cues which he has encountered, he becomes aware of this inconsistency, re-evaluates the cues, and corrects his error. If he does not immediately become aware of his error he reads on encountering more cues. These subsequent cues may cause him again to re-evaluate, to go back and to correct his error so that what follows makes sense. In two cases the error goes uncorrected.

1. If the error makes no difference, it will not be inconsistent with the available cues. It will therefore go unnoticed.

2. If the reader is relying heavily on analytical techniques or is not attempting to reconstruct "the message" from his reading, he will not be aware of inconsistencies caused by his errors.

Naturalness: The assistant was instructed to rate the reading of each paragraph from 1 - 5. A rating of 1 means natural speech intonations, while 5 means word calling or no pattern of intonation. As could be expected, there is some improvement in the average rating from grade to grade. The naturalness averages were: First Grade 3.96, Second Grade 3.58, Third Grade 3.22 The grand mean was 3.60. Only one child, a third grader had a rating of 1. She achieved almost a dramatic quality in her reading. Two children, one each from second and third grade had ratings between 1 and 2. Seven children, including a first grader and six third graders were rated 2. All others rated 3 or below.

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TABLE VI

NATURALNESS RATING AND AVERAGE LINES OF RETOLD STORY

Rating	First Grade			Second Grade			Third Grade			Composite		
	N	Aver.	Range	N	Aver.	Range	N	Aver.	Range	N	Aver.	Range
1	0	-	-	0	-	-	1	18	18	1	18	18
1-2	0	-	-	1	27	27	1	6	6	2	16.5	6-27
2	1	21	21	0	-	-	6	20.5	5-46	7	21	5-46
2-3	0	-	-	0	-	-	0	-	-	-	-	-
3	7	8.33	1-18	10	11.20	2-26	9	15.67	5-26	26	11.92	1-26
3-4	3	8.00	2-17	3	13.67	6-23	4	18.25	12-29	10	14.91	2-29
4	14	2.57	0-11	15	7.15	0-26	10	10.9	2-39	39	5.94	0-39
4-5	2	2.50	0-5	1	2	2	2	28.5	1-56	5	12.8	0-56
5	8	.88	0-3	1	8	8	1	6	6	10	2.1	0-8
Totals	35	4.26	0-21	31	9.58	0-27	34	15.67	1-56	100	9.79	0-56

First Grade Rating 3.96   Second Grade Rating 3.58   Third Grade Rating 3.22   Average Rating, all 3.60

To get some idea of the relationship between naturalness and comprehension, the ratings were compared (Table VI.) with the number of typed lines of retold story of each child. This latter is by no means a reliable measure of comprehension, but the researcher wished to avoid the use of questions or any subjective measure of comprehension.

Among the first graders the average number of lines read by children at each level of naturalness was as expected; those with ratings of 5 averaged less than one line of retold story, while the group rating 4 averaged two and a half lines; those rating 3 averaged eight lines, and the child with the 2 rating told a twenty-one line story. Even among first graders, however, there was extreme variation. Those with 3 ratings retold from one to eighteen lines of story.

Among second and third graders the relationship between naturalness and extent of retold story was not nearly as clear. The longest retold story, fifty-six lines, was told by a third grader who rated between 4 and 5. A child who rated between 1 and 2 told a six line story. We can conclude from this study that children tend to retain more of a story if they read naturally, but some very unnatural readers retain a great deal. It is also likely that children with very complete comprehension are better able to reduce a story to its essence in retelling it.

There was an increase in ability of readers of all levels of naturalness in successive grades to retell the stories they read.

Some children apparently learn to comprehend an artificial reading dialect in addition to their own natural speech.

Analysis not yet complete

Not completed is a comparison of the structure of the language in the stories which the children read and the structure of the language in their retold stories. One problem is finding a suitable structural analysis to use. Some of the data have been analyzed using a system developed by a group of linguists for studies by Ruth Strickland and Walter Loban.

A partial analysis of the structure of book and retold story language appears at this point to indicate:

1. As Strickland has stated, certain structures which exist in books do not exist at all in the language of children. A common example is this pattern: "Tom," called Mother. In traditional terminology this is an object-verb-subject pattern; it did not occur in the children's retelling. They tended to replace it with the more usual subject-verb-object pattern, Mother called Tom, or Mother called "Tom."

2. There were two notable tendencies in the children's retelling of stories. On one hand they tended as the writer had expected, to change the book language to their own; but there also was a tendency on the part of some pupils to slip into a bookish dialect using words and expressions which were not present in their earlier informal speech. It seems likely on the basis of this incomplete evidence that some children are trying to make sense out of the book in terms of their own language while others are learning to understand book-talk.

The analysis of the subject's intonational patterns is continuing in greater depth. There is little precedent for the application of intonational analysis to the oral reading of children. Linguists are not themselves agreed on such basic matters as how many different stresses and pitch levels there are. Pitch changes are hard to hear particularly in continuous passages (as compared with isolated sentences) because differences are more relative than absolute. That is, pitch may go up but be lower than normal pitch in the sentence which immediately preceded or follows. An additional problem is separating out the dramatic or emotional intonational superfixes from the structural ones.

One preliminary conclusion from the intonational analysis is that natural sentence terminal patterns are seldom consistently present in the oral reading of children, that is children tend to read through punctuation. Whether this would be improved by more effective teaching of the function of punctuation is an interesting question. Children, at least those in this study, seem to make little practical use of punctuational cues. They appear to rely more on the patterns and other signal systems for intonation.

A few children even tried to put intonations in their reading of the list to make "sense out of the words. Oak and park in adjacent columns were read by several as "Oak park." the name of a nearby suburb.

The General and the Particular: This study produced certain quantifiable phenomena which could be treated statistically. For example, it was possible to count errors, put them in categories and manipulate the quantities. So much, however, is lost this way. Every error is a phenomenon in itself. Where does one find a place in statistical analysis for an exhausted first grader's lament, "I sure wish I had a vowel chart." Obviously, in addition to statistical treatment, the body of evidence collected here required careful consideration of every individual event lest the trees be lost in the forest.

One vital conclusion of such careful consideration is the wide, wide range of reading difficulties which children demonstrate. They literally make every type of error that it is theoretically possible to make--but no single child makes all types of errors. Different children can have a similar problem for opposite reasons. For example, one child misses many words seemingly due to a lack of ability to utilize initial consonant cues, but another child misses many words because he overuses initial consonants.

In examining the tremendous range of reading difficulties which the children in this study demonstrated, the researcher sought to categorize them linguistically. The taxonomy which was produced does not represent an attempt to judge the relative significance of types of difficulty. It is indeed only a catalogue of the difficulties which children did show in this study. Future research may explore the relative frequency of each type of problem.

The researcher has attempted, however, utilizing both the theoretical base and the actual behavior of the subjects, to achieve some insight into cause and effect.

Among our hypotheses is the statement, "Errors are not haphazard in reading but are cued." In the analysis we demonstrated that children can "get," in the context of language, most words which they cannot get in lists. If correct reading is cued, however, so is incorrect reading. When the child looks at the printed page and says something incorrectly he is responding just as much to graphic cues as he is when he says the right thing. A careful analysis of the types of errors readers make, using modern linguistic concepts, should help us to understand the problems of learning to read. If we can also identify the cues or combinations of cues which produce errors, we should make a long step forward in reading instruction.

Reading, we have said earlier, involves the interaction of the reader with the material being read. The reader's responses to the cue systems within the language are conditioned by his prior language experience. His responses to written language become additional cues for his subsequent responses. In seeking

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The potential cues for particular reading behavior then, one must look not only at the written material but at the reader, his language, his experience, and his language training as well.

Here is a partial list of the systems operating to cue and miscue the reader as he interacts with written material.

Cue Systems in Reading

Cues within words:
    Letter-sound relationships
    Shape (word configuration)
    Known "little words" in bigger words
    Whole known words

Cues in language:
    Patterns of word order
    Inflection and inflectional agreement
    Function words (noun markers, etc.)
    Intonation - punctuation
    Contextual meaning of prior and subsequent language
        elements and whole utterance

Cues external to language and reader:
    Pictures
    Prompting: teacher or peers
    Concrete objects
    Skill charts

Cues within the reader:
    Language facility--Internalization of a dialect of the
        language
    Experiencial background
    Conceptual background and ability
    Learned reading attacks, skills, and learning strategies.

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A Preliminary Linguistic Taxonomy of Cues and Miscues in Reading

I. Phonemic

Definition: A phoneme is a unit of sound which is recognized by users of a language as different from other units and which makes a difference between words. A phonemic reading error is the substitution of one word or phrase for another with a single phoneme changed. In English two words may differ considerably in spelling, but by only one phoneme in speech. Examples: stewed/stood, though/go. Vowel and consonant phonemes are the sounds of the languages--<u>not</u> the letters of the alphabet.

A. <u>Vowel phoneme substitutions</u>:

Almost every vowel phoneme is found substituted for almost every other in the reading of children. The problem is by no means limited to so-called "long" and "short" vowels. Examples:* Laced/last, white/what, new/now, known/none, fill/feel, fellow/follow, foul/fill, fluid/flood, well/wheel, year/your, warsh/wash, gee/Joe, nose/noise, light/late, sow/saw, amazing/amusing, roughtops/ rooftops.

B. <u>Consonant phoneme substitutions</u>:

Consonant substitutions are fewer and more limited in range. Examples: Yes/yet, train/crain, log/long, feed/feet, bills/hills, make/cake, pleasant/present, by/my, night/right.

C. <u>Phonemic insertion</u>:

An extra phoneme is introduced. Examples: laughded/ laughed, shortly/shorty.

D. <u>Phonemic Omission</u>:

A phoneme is omitted. Examples: stores/stories, hep/help, ode/old, sigh/side.

E. <u>Phonemic Reversal</u>:

Sounds are reversed. Example: axed/asked.

*Laced/last means that the subject substituted laced for last.

<u>Potential cues for phonemic errors</u>

1. Inconsistent phoneme--letter relationships. (A, B, E)
2. Over application of learned rules. (A, B)
3. Dialect differences. (A, B, C, D, E)
4. Overuse of initial and final consonants. (A, B, D)
5. Phonetic similarity. Some phonemes are closely related.(A, B)
6. Similarity to more familiar word. (A, B, C, D)
7. Speech defect. (A, B, C, D, E)
8. Association from classroom drill. (A, B)
9. Similar configuration. (A, B, C, D)
10. Attempt to produce euphony. (C, D, E)
11. Immature language development (C, D, E)
12. Faulty vision. (A, B, C, D, E)
13. Vowel variability in speech. (In English all unaccented vowels are pronounced the same) (A)

II. Orthographic

> <u>Definition</u>: Letters or combinations of letters are the unit symbols of written language. Orthographic errors principally result from the characteristics of written language, that is the similarities and differences of words and letters.

A. <u>Sounding* errors</u>:

Substitute words contain sounds incorrectly associated with letter combinations.
Examples: Chemical/kemical, off/of, a lone/alone

B. <u>Sounding silent* letters</u>:

Non-functional letters are pronounced. <u>Examples</u>: Rikit/right, <u>is</u>land/island, of<u>t</u>en/often, com<u>b</u>/comb.

C. <u>Letter, spelling, reversal</u>:

<u>Examples</u>: from/form, stop/spot, was/saw, ever/very, sing/sign, begin/being, won/own.

D. <u>Letter substitution</u>:

Words are read as if one letter were another.
<u>Examples</u>: planes/plants, out/put, away/ sway, face/fact, signed/sighed, fire/five, month/mouth.

E. <u>Similar spelling substitution</u>:

Words are mistaken for similarly spelled words.
<u>Examples</u>: that/what, then/when, the/he, every/very.

*Letters, of course, do not have sounds. We use these terms here to refer to producing a sound in response to letter cues.

<u>Potential cues for orthographic errors</u>

1. Overgeneralization about constancy of phoneme-
   letter relationship. (A,B)
2. Focus on elements rather than wholes. (A,B,C)
3. Lack of familiarity with words or concepts. (A,B,C,D,E)
4. Recognition of little words in big ones. (A,B)
5. Use of unnatural pronunciations in instruction. (A,B)
6. Configuration. (similar shapes of letters or words)
   (A,B,D,E)
7. Visual problem. (C,D,E)
8. Unclear type. (C,D,E)
9. Learning of words in spelling lists. (A,B,C,D,E)
10. Overuse of analytical techniques. (A,B)

III. Morphemic

<u>Definition</u>: A morpheme is a molecule of language. It
is the smallest unit of language which can bear a
relationship to meaning. A morpheme is composed of
one or more phonemes. It may be a word or a combining
form.

A. <u>Inflectional suffixes added</u>:

Suffixes such as: /s/, /ed/, /ing/, /'s/, are added.
<u>Examples</u>: sees/see, asked/ask

B. <u>Inflectional suffixes are deleted</u>:

The same suffixes are dropped off when the word is
read: <u>Examples</u>: help/helps, boy/boys, telephone/telephoned,
happen/happening.

C. <u>Inflectional suffixes are substituted</u>:

/Ed/, /ing/, /s/, /'s/, are used interchangeably in
place of each other in the reading. <u>Examples</u>: laughing/
laughed, asked/asking, jumps/jumped, looking/looks.

D. <u>Negative morpheme suffix /nt/ is added or deleted</u>:

<u>Examples</u>: can/can't, mustn't/must, could/couldn't.

E. <u>Allomorph substitution</u>:

An allomorph is a variant form of a morpheme. <u>Examples</u>:
laughded/laughed, drownded/ drowned, kids's/kids, brushded/
brushed.

F. <u>Derivational suffixes added or deleted</u>:

<u>Example</u>: Work/worker

<u>Potential cues for Morphemic errors</u>

1. Variation in dialect. (A,B,C,E,F)
2. Cutting off of word endings in speech. (B,D,F)
3. Previous errors which cue parallel forms. (A,B,C,F)

4. Over reliance on key consonants. (B,D,E,F)
5. Focus on main elements. (A,B,C,D,F)
6. Immature language development. (A,B,C,E,F)
7. Overgeneralization of inflectional rules. (A,B,C,E)
8. Speech or visual defect. (A,B,C,D,F)

IV. Morphophonemic

Definition: Here this term is used to describe the accommodations made necessary in adjacent phonemes in a morpheme or in adjacent morphemes.

A. Slurring of sounds or phonemes in certain morphemic settings:

Examples: herda/heard of, dunnit/done it

B. Overpronouncing of phonemes in certain morphemic settings:

Examples: have to/hafta, lit-tle/little.

Potential cues

1. Hearing or speech impediment. (A)
2. Misheard forms. (A,B)
3. Presentation of words in lists. (B)
4. Overuse of generalizations about sound and letter connections. (B)
5. Unnatural pronunciations used by teachers. (B)
6. Prior language experience. (A,B)

V. Referential meaning

A. Synonym substitution:

Children frequently substitute words which mean the same thing. Usually this takes place in a single situation but in a few cases the substitution may be consistent throughout a story. Examples: house/home, look/see, kitten/cat, mommy/mother, daddy/father.

B. Associated meaning substitution:

Words with similar but not the same meaning are substituted. Examples: miss/Mrs., asked/guessed, pound/press, water/river, everything/anything, trees/leaves, date/day, two/three, clothes/dresses, world/country, lake/river, holiday/halloween, cried/sighed, said/smiled.

C. Antonym substitutions:

Opposites are frequently interchanged. Examples: up/down, out/in, come/go, here/there, asked/answered.

D. Similar name substitutions:

Examples: Jim/Tom, Sally/Susan, Dick/Ted.

<u>Potential Cues</u>

1. Context. (A,B,C,D)
2. Pictures. (A,B,C,D)
3. Nonexistence of the actual word in the oral vocabulary of the reader. (A,B,D)
4. Previous reading instruction. (D)
5. Mental association. (A,B,C,D)
6. Insufficient use of cues within words. (A,B,C,D)
7. Preoccupation with meaning. (A,B,C,D)

VI. Inflectional

<u>Definition</u>: Inflectional errors involve using alternate inflected forms of a word.

A. <u>Verb form substitution</u>:

<u>Example</u>: forget/forgot, has/had, see/saw, done/did, look/looked, do/did, was/were, use/used, noticed/notice, doesn't/don't.

B. <u>Noun form substitutions</u>: (Including pronouns)

<u>Examples</u>: boy/boys, Ted/Ted's, mine/my, presses/press, his/him, me/I.

C. <u>Comparative form substitutions</u>:

<u>Example</u>: faster/fast

D. <u>Incorrect inflectional forms</u>:

<u>Examples</u>: shooked/shook, taked/took, more better/better

E. <u>Substitution of noun inflections for verb inflections</u>:

<u>Example</u>: telephone/telephoned

<u>Potential Cues</u>

1. Variation in dialect. (A,B,C,D)
2. Morphemic substitutions. (A,B,E)
3. Faulty vision or speech. (A,B,E)
4. Immature language development. (A,B,C,D)
5. Prior error which cues agreement. (A,B,E)
6. Overgeneralization (analogy) (D)

VII. Functional

Definition: Certain words are classified by
many linguists as function or structure words.
Function words exercise important functions
as cues themselves, but do not carry much
meaning. Children frequently interchange
words with the same function.

A. Noun marker (determiner) substitutions:

Noun markers function to identify nouns.
Examples: a/the, my/the, the/this, two/three,
my/your.

B. Verb marker substitutions:

Traditionally called auxiliary verbs, these words
are used to mark or introduce verbs. Examples: will/
can, could/did, is/was, don't/didn't, could/would,
has/was, will/would, shall/should.

C. Question marker substitutions:

Question markers are words which are recognized
as introducing questions. Examples: what/where,
which/when, where/when.

D. Clause marker substitutions:

Some words introduce clauses: Example:
when/then, what/who.

E. Phrase marker substitutions: (Prepositions)

Examples: in/on, into/onto, of/on, in/into,
at/by, at/on, at/in, on/of, from/for, on/down,
up/out.

F. Intensifier substitutions:

Intensifiers are words which somehow increase
the intensity of the meaning of the phrase in which
they are included. Examples: very/ever, some/many.

G. Other function group substitutions:

Example: here/there.

H. Negative insertion or deletion.

Example: He is not going/He is going.

Potential Cues

1. Structural frame. (A - G)
2. Preoccupation with passage meaning. (A - H)
3. Prior error which cues agreement. (A,B)
4. Relative meaninglessness of individual
   function words. (A - G)
5. Association of functions. (A - G)
6. Configuration. (Some examples: B - G)
7. Drill on words in lists. (A - H)
8. Variant usage. (A,B,D,E,F)
9. Anticipation of probable next word. (A - H)

VIII. Dialect

Definition: Many errors appear to be dialect based. The child is essentially, when he makes this type of error, reading his own dialect from the printed page and is wrong only from the point of view of another dialect, although the other dialect may be a socially preferred one.

A. **Variant phonemes:**

   Example: riot/right, cahs/cars

B. **Variant usages:**

   Examples: was/were, come/came, done/did

C. **Preferred word substitutions:**

   Examples: most/almost, set/sit,
   can/may, punkins/pumpkins, further/farther, should/shall,
   got/received

Potential Cues

   1. Previous language experience. (A,B,C)

   2. Context. (B,C)

   3. Pictures. (C)

IX. Allolog substitutions.

Definition: Short or long alternate word forms are allologs. Substitution of one for another may change the literary quality but not the structural correctness of the phrase.

A. **Contraction for full term:**

   Examples: there's/there is, can't/can not,
   they're/they are, I'm/I am.

B. **Full term for contraction:**

   Examples: we will/we'll, I am/I'm, we would/we'd.

C. **Long and short form allologs:**

   Examples: dolly/doll, Tom/Tommy, Susan/Sue, kitty/
   kitten, typewriting/typing, planes/airplanes, Billy/Bill.

D. **Book dialect allologs:**

   Some children seem to have acquired allologs for certain words and compound words which exist in their reading in place of those in their speech. **Examples:**
   lit-tle/little, have to/hafta.

<u>Potential Cues</u>

1. Previous language experience (the reader tends
    to make language sound more natural). (A,C)
2. Equivalence. (A - D)
3. Uncertainty about acceptability of contractions. (B,C,D,)
4. Presentation of words on lists. (B,C,D)
5. Overemphasis on pronunciation or enunciation. (B,D)
6. Focus on spelling. (B,D)
7. Desire to create euphony. (A,B,C,D)

X. Intonation

<u>Definition</u>: Intonation is the system of voice
modulations, juncture, stresses and pitch which
are superimposed on the language and help it to
convey meaning.

A. <u>Juncture</u>:

Linguists refer to the system of putting
spaces between language elements to separate them
or the lack of such spaces as juncture. 1. Split-
ting words. <u>Examples</u>: a boat/about, Jim my/Jimmy,
2. Splitting compounds. <u>Examples</u>: /cut/ /down/
for /cut down/. 3. Insertion or misplacement of
phrase terminal junctures. <u>Example</u>: (original)
"He was ready and waiting when his father and
mother stopped for him." (Read as): "He was
ready and waiting <u>for</u> his father. And mother
stopped for him." Original: "Thank you for
telling us the secret," Mr. Summers said, "We
should. . . read as: "Thank you for telling us
the secret," said Mr. Summers. "We should . . .

B. <u>Stress</u>

Most linguists agree that there are at least
four different stresses in English. Stress is an
important cue system in providing the child with
meaning.

1. Use of list stress on words in context.
Note: Words when they are read on lists have an
even type of stress. Children who read words
rather than language use this list stress. This
was perhaps the most frequent type of error in
the entire study.
2. Heavy stress on wrong syllable of word.
<u>Example</u>: dessért/désert.
3. Incorrect distribution of relative stresses
in compound words, phrases and sentences. <u>Example</u>:
The gréen house/ the gréenhóuse.

C. Pitch

1. Flat even pitch on all words. Each word is given the same pitch with few rises or falls.

2. Incorrect phrase terminal pitch. The pitch at the end of a phrase is one of the most important signals that a phrase has been concluded. Incorrect phrase terminal pitch is associated with a child reading through punctuation.

3. Use of statement pitch patterns in place of question pitch. Statement pitch patterns differ from question pitch patterns as any user of the language realizes.

Potential Cues

1. Word calling habits. (A,B,C)

2. Bad breaks in the type setting. (A,B,C)

3. Presentation of words in lists before reading the story. (A,B,C)

4. Finding little words in big ones. (A,B,C)

5. Inadequate use of punctuational cues. (A,B,C)

6. Overpronouncing of words by teachers. (B,C)

7. Inadequate attention to structural cues.

8. Structural complexity of the text. (A,B,C)

9. Unusual structures in the text which do not exist in the child's language. (A,B,C)

10. Prior errors in the reading. Note: Misreading of function words can have an important effect in miscuing the intonational patterns which follow. If the child reads/when/as/then/, he no long has a function word which indicates a question follows, but he has a statement pattern indicated. (A,B,C)

XI. Word Confusion

A. Substitution of habitually associated words:

Example: said/is, was/saw

B. Homophone Substitution:

Homophones are words that sound the same but may be spelled differently. <u>Examples</u>: know/no here/hear, too/to.

C. Configuration:

1. Homograph substition. Homographs are words which are spelled the same but may be pronounced differently. <u>Examples</u>: read/read, lead/lead.

2. Similar shape substitutions. <u>Example</u>: all/off, department/apartment, typewriters/type setters, excitement/experiment, explained/exclaimed, through/thought, footsteps/rooftops, any/an.

3. Somewhat similar. <u>Examples</u>: surprise/prize, pigpens/pigeons, which/with,they/there, longer/ along.

<u>Potential cues</u>

1. Configuration. (A,C)
2. Learning of words in lists. (A,B,C)
3. Overattention to key elements. (C)
4. Ambiguity in the particular use. (C1)

XII. Syntactic errors

<u>Definition</u>: Syntax is the arrangement of the morphemes or words into sentences or phrases.

A. <u>Rearrangement of elements</u>:

<u>Example</u>: It is much farther/Is it much further, Here is it/here it is, How long did you take/ how long did it take you

B. <u>Rephrasing with word order basically retained</u>:

<u>Example</u>:
Mr. Brooks telephone/Mr. Brooks telephoned.

C. <u>Omission of elements</u>:

<u>Example</u>: Are you hungry as I am/are you as hungry as I am

D. <u>Insertion of elements</u>:

<u>Examples</u>: But I don't know you/but I know you.

And he hurried to telephone/and hurried to
telephone. We say that the paper is put to bed/
we say the paper is put to bed. We can lay down/
we can land. Note. Children frequently insert
the conjunction/and/into sentences and phrases.

E.   Revision to agree with prior cue: (including prior
      errors)

      Example: We can land and We'll/We can land and
      I'll; The talk/they talked; well, you can carry
      Dusty for Bob/will you take care of Dusty for
      Bob. He sleeps almost every time/he sleeps most
      of the time. he has/we have. If it's true/ Is
      it true

F.   Revision to correct grammar:

      Example: They come/they came; he done it/he
      did it.

Potential Cues for syntactical errors

1.   Visual problem (A,B,C)
2.   Preoccupation with meaning (A,C,D,E,F)
3.   Conception that words always perform same function
     (i.e. telephone is always a noun) (A - F)
4.   Unnatural patterns in book language. (A - F)
5.   Deviant dialect of reader. (A - F)
6.   Prior error. (E)
7.   Ambiguity in language. (B)
8.   Inefficient use of punctuational cues. (A,B,C,D)
9.   Inefficient use of intonational cues. (A,B,C,D)
10. Frequent association of certain words in language
     (example: look at) (C,D,E)

XIII. Mazes

Definition: Ruth Strickland, in her study of
children's language, used the term maze to refer to any
language which the child produced which did not seem to
be of a communicative nature and did not fit into the
flow of speech, such as the frequent uh, uh, uh, or
similar idiosyncratic verbal elements. False starts also
are considered mazes.

Potential Cues

1.   Mental stalling, while seeking a way out of the maze.
2.   Speech habits.
3.   Speech defects (stuttering).

Conclusions

This study has contributed to a linguistically based
communicative theory of reading. Although the sample was
a limited one, it was sufficient to demonstrate the pro-
ductiveness of the theory in explaining reading phenomena.

The study indicated that first, second, and third
grade children can read many words in context which they
cannot read from lists. This supports the theoretical
contention that readers respond to many cue systems in
reading which do not exist in words or letters alone.

Regressions in reading shed some light on how readers
use cues in their reading. Most regressions are made to
improve comprehension. If the regression immediately
follows an error then the reader is aware that what he has
just read is inconsistent with what came before. If the
regression comes after the reader has proceded for some
distance then he has found subsequent cues to be incon-
sistent with his error and his regression is to achieve
consistency.

Not all errors in reading lead to regression. Many
are unnoticed even by fairly proficient readers. In
general it is the errors which interfere with comprehen-
sion which lead to corrective regressions. Those errors
which are not inconsistent with prior or subsequent cues
go uncorrected and may not be significant errors. Teachers
perhaps should not stop the children from reading these
errors.
Many children read with extremely unnatural intona-
tions. Very few read with really natural intonations. In
general there appears to be support for the hypothesis that
intonation does influence comprehension.

Considering that all the readers in this study are in
the same school with a relatively consistent approach to
teaching reading, it is remarkable how varied their read-
ing behavior was and how diverse their difficulties. These
100 youngsters provided examples of every type of reading
difficulty which could be predicted on the basis of lingu-
istic theory.

The evidence from this study raises questions about
some of the most common practices in reading teaching.

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The first and most fundamental practice made questionable
is the shotgun teaching of "word attack skills" to all members
of a group or class at the same time. If, for example, a group
of 20 children all get intensive lessons on words starting with
initial m and b, some may profit, some may suffer greatly, some
may neither profit nor suffer. How the lesson affects each
child will depend on what difficulties he is encountering at
the time. In a sense it's as if a doctor lined up all the
children under his care and gave them all the same medication
on the theory that some need it now and some will need it in the
future, and some needed it in the past.

Another common practice, the prior introduction of all "new"
words in a story before the children are permitted to read it,
is also questionable. It may be that more harm than good is
done by this practice, but in any case it seems unnecessary in
view of the ability of youngsters to get new words from context.

The self-correction in which children, particularly in
second and third grade, engage suggests that teachers would do
well to avoid interrupting children during oral reading to
correct errors. If children use the cues available to them in
reading to correct their own errors this is obviously prefer-
rable to having teachers or other children correct them.

It appears from this study that reading materials, particu-
larly basal readers, should be based more completely on natural
language and their writers should carefully consider how they
present cues to readers.

Next Steps:

Some parts of this study are still in progress. These are
the structural and intonational aspects of children's reading
referred to in more detail earlier.

A major area of continuing research could involve project-
ing this study into grade four and higher to determine if some
of the trends in reading behavior indicated in this study for
the lower grades are also evident among older readers.

Several avenues of research are opened with the linguistic
taxonomy. One could be a quantification of types of miscues
at various grade levels. Another potential study could compare
very high and very low achievers to see the differences or
similarities in their problems. These studies could also con-
tribute to refinement of the taxonomy as a schematic tool.

Studies either replicating this study or similar to it could involve children who speak divergent socio-geographic dialects. We need to know a great deal more about problems of children learning to read a dialect which is not their own.

Somewhat farther in the future is the extension of the communicative theory which this and subsequent research is developing into the realm of curriculum and instruction. Some aspects of this to be explored are reading readiness, (which involves total language development) reading materials which are linguistically valid, diagnostic and instructional procedures to get at identified reading difficulties, and ultimately an articulated reading curriculum.

The purpose of all research in reading learning and teaching must ultimately be the production of better teaching for better learning. This study has indicated that a consistent language-based theory may be the key to real progress.