DOCUMENT RESUME

ED 258 460 FL 015 088

AUTHOR Rodriguez-Brown, Flora V.; Yirchott, Lynne S.
TITLE A Comparative Analysis of Oral Reading Miscues Made by Monolingual versus Bilingual Students. Bilingual Education Paper Series. Vol. 7 No. 5.
INSTITUTION California State Univ., Los Angeles. Evaluation, Dissemination and Assessment Center.
SPONS AGEN Office of Bilingual Education and Minority Languages Affairs (ED), Washington, DC.
PUB DATE Dec 83
NOTE 31p.; Paper presented at the annual meeting of the American Educational Research Association (Boston, MA, April 1, 1980).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Bilingual Education; *Bilingualism; Comparative Analysis; English; English (Second Language); Grade 3; *Miscue Analysis; *Monolingualism; *Oral Reading; Primary Education; *Reading Skills; Spanish

ABSTRACT

Using an adaptation of a miscue taxonomy developed by Cziko, a study compared the reading performance of: (1) English-monolingual and bilingual third-grade students reading in English; (2) Spanish-monolingual and bilingual third-grade students reading in Spanish, and (3) bilingual third-grade students reading in Spanish and English. The subjects were 23 children attending integrated schools in two school districts in Illinois. The oral reading samples were collected using videotape. The miscue coding system used for analysis was adapted by adding or deleting categories as needed, according to the study's purpose and the characteristics of the Spanish language. Interrater reliability was calculated to ensure that the categories were reliable and that the coders understood the categories and coded them properly. Results show that by third grade, children are still using mainly graphic rather than contextual information while reading. A trend toward increasing the use of contextual constraints was found that seemed to be consistent with an interactive view of reading. In general, it was found that English-monolinguals used more contextual information than either the Spanish-monolingual readers or the bilingual subjects. The results raise the question of when second-language reading should be introduced to bilingual children: at the same time as first-language reading or after considerable development of first-language reading skills. Further research on the transfer of skills from first to second language is also needed. (Author/MSE)

ISSN 0161-3707

Vol. 7 No. 5
December 1983

Bilingual Education PAPER SERIES

A COMPARATIVE ANALYSIS OF ORAL READING MISCUES MADE BY MONOLINGUAL VERSUS BILINGUAL STUDENTS

Flora V. Rodriguez-Brown
University of Illinois at Chicago

Lynne S. Yirchott

Evaluation, Dissemination and Assessment Center
California State University, Los Angeles
5151 State University Drive
Los Angeles, CA. 90032

The subject of this publication was supported in whole or in part by the United States Education Department. The opinions expressed herein do not necessarily reflect the position or policy of the United States Education Department; no official endorsement by the United States Education Department should be inferred.

This publication was printed with funds provided by the Bilingual Education Act, Title VII of the Elementary and Secondary Education Act of 1965, as amended by Public Law 93.380.

A COMPARATIVE ANALYSIS OF ORAL READING MISCUES MADE BY MONOLINGUAL VERSUS BILINGUAL STUDENTS*

Flora V. Rodriguez-Brown
Lynne S. Yirchott

ABSTRACT

Using an adaptation of a miscue taxonomy developed by Cziko (1978), this study tried to compare the reading performance of: (1) English-monolingual and bilingual third-grade students reading in English, (2) Spanish-monolingual and bilingual third-grade students reading in Spanish, and (3) bilingual third-grade students reading in Spanish and English.

The subjects of the study were 23 children attending integrated schools in two school districts in Illinois. The samples of oral reading were collected using videotape. The miscue coding system used for analysis was adapted by adding or deleting categories as needed, according to the purpose of the study and the characteristics of the Spanish language. Interrater reliability was calculated to make sure the categories were reliable and that the coders understood the categories and coded them properly.

Results of the study show that, by third grade, children are still using mainly the graphic rather than the contextual information of the text while reading. A trend toward increasing the use of contextual constraints of the text was found which seemed to be consistent with an interactive view of reading discussed by Rumelhart (1976). In general, it was found that English-monolingual readers used more contextual information than either the Spanish-monolingual readers or the bilingual subjects, in that order. Implications of these findings for educational practice and future research are discussed in this paper.

---

*This paper was originally presented at the American Educational Research Association Meeting in Boston, Massachusetts, on April 1, 1980.

INTRODUCTION

The enactment of the **Bilingual Education Act** into the **Elementary and Secondary Education Act** of 1965 has caused increased public interest in bilingual education. Up to now, many decisions made regarding the design and management of these programs were based on personal intuitions rather than research. Decision making in this area calls for a sound research base so that programs will better serve the needs of culturally and linguistically different children in the United States.

This study addresses one of the areas where research is needed: reading in a bilingual school setting. Although several studies have been carried out in second-language reading, most of the ones found by the investigators, except Young (1972) and Stafford (1976), involved adult or college-level populations and/or were well developed in settings outside the United States (Tucker, 1975; Cummins, 1975; Cziko, 1976, 1978; Cowan and Sarmed, 1976). The purpose of this study is to examine: (a) the miscues produced by English-monolingual versus bilingual third-grade students as they read orally in English, (b) the miscues made by bilingual students reading in both Spanish and English, and (c) the miscues made by Spanish-monolingual and bilingual students while reading orally in Spanish.

RATIONALE FOR THE STUDY AND RESEARCH QUESTIONS

Although research in reading with bilingual subjects is scarce, there are several studies in second-language reading that have explored contextual and graphic constraints by second-language readers. MacNamara (1970), Young

(1972), Stafford (1976), and Theberge (1976) found that second-language readers have problems using context information. Young (1972) studied the errors made by fifth-grade Mexican-American children reading in English. Cziko (1978) studied the errors made by seventh-grade children reading in French, their second language. Hatch (1974), Oller (1972), and Tucker (1975) found that second-language readers rely more on graphic than contextual information while reading.

K. S. Goodman (1969), Y. Goodman (1967), Weber (1970), and Hood (1975-1976) studied the errors made by English-monolingual subjects to observe their sensibility to contextual (semantic-syntactic) constraints and to graphic information. They developed their own taxonomies of errors or miscues to observe and study. Following Hood (1975-1976), Cziko (1978) developed his own error coding system to be used in an analysis of errors made by second-language readers.

Because of the differences found between L_1 and L_2[1] English readers on the use of semantic and/or graphic constraints in the text, research involving reading miscue analysis with Spanish/English bilingual children could be relevant to the education of these children. This study shows evidence that bilingual and English-monolingual children make the same or different miscues while learning to read. The study looks for strategies used by students as they learn to read in L_2 and problems they may encounter during the process. These findings can be very useful to bilingual education practitioners and add research evidence on bilinguals' (Spanish/English) use of graphic and semantic constraints in [illegible].

---

[1] L_1 refers to native language
L_2 refers to second language

This study adapted a miscue taxonomy previously used with French-English bilinguals to implement a miscue analysis of oral reading behavior of English monolingual, Spanish monolingual, and bilingual third-grade students. An attempt was made to answer the following questions:

1. What does the miscue analysis of third-grade English monolingual and bilingual[2] students reading in English tell us about their similarities and differences in the reading process?
2. How does oral reading performance compare between the bilingual and monolingual Spanish students?
3. How does the performance of bilingual students compare between the two languages, Spanish and English?

METHODOLOGY

Subjects

The subjects of this study are 23 children (11 boys and 12 girls) attending third grade in two different Illinois public school districts. Eight of these children are English monolingual, seven are Spanish monolingual, and eight are bilingual education program students reading in Spanish and English.

Procedure

The subjects of the study were chosen randomly among third-grade students attending two different school districts. If a child missed school on the date of data collection, an alternate child was chosen as a subject.

---

[2]As defined for this study, "bilingual" children are those who are attending bilingual programs because they lack the English proficiency to fully participate in an all-English class.

Children were called individually to read aloud while being videotaped with a Sony 3600 videotape recorder and a Sony AV3250 stationary video camera. They were asked first to read a story from their current reading books, then to read from materials provided by the investigators. The materials used for videotaping were chosen according to whether children were English-monolingual, Spanish-monolingual, or bilingual speakers. It was thought that if the subjects were allowed to read from their own books first, they would feel more at ease when asked to read the provided materials.

The reading materials were analyzed by the Fry (1968) readability formula to determine reading level. The English materials were chosen from the Santillana **Reading in Two Languages** Series (1976). The Spanish materials came from the Laidlaw Brothers Publishers Series, **Por el Mundo del Cuento y la Aventura** (1962-1967).

Although there was no problem finding an English reading text at the desired reading level, it was difficult to find a Spanish reading text using the Fry readability formula. Since the readability formula was designed to determine grade levels of English reading materials, peculiarities of the Spanish language do not allow appropriate use of this formula with Spanish materials. However, the Spanish text that most closely fit the Fry formula requirements for a third-grade reading text was used.

Data Analysis

The first step in treating the data was development of a coding system to facilitate data organization for later analysis. Using an error taxonomy similar to that used by Cziko (1978) with bilingual students, a coding system was developed that took into account the specific purposes of the study. The selection of a coding system included the following criteria: (a) reliabil-

ity, (b) ease of use by undergraduate students with minimum training, and (c) requirement of the least possible transcription. The coding system developed for the study and an explanation of the different categories appear in the Appendix.

To check the reliability of the coding system, data for three subjects reading in Spanish and three in English were coded by two different native speakers of the language. This was done to assure that the people coding the tapes understood the different categories and identified miscues equally well. The Pearson product-moment correlation was used to calculate the interrater reliability. Table 1 shows the results of the reliability check for the coding system in Spanish and in English.

The interrater reliability could not be calculated for all categories because some miscues did not occur often in the data. Reliabilities for seven categories in English and five in Spanish were calculated. In the Spanish reading sample, a complete misunderstanding by one of the coders regarding the meaning of deletions made it impossible to calculate its reliability. The interrater reliability correlations ranged from .30 to 1.00 and were all significant ($p < .01$).

After the videotapes for all subjects were coded and counts and percent tables developed, t tests were carried out to determine the significance of the differences and to aid explanation of findings.

While the Spanish data was being coded, it was found that a category parallel to similar spelling (SMSP), which was called similar sound (SMSOU) had to be included in the coding system when used with Spanish readers. The inclusion of the category was necessary because Spanish is a phonetic language. Another category added to the Spanish miscue analysis was the diph-

Table 1

INTERRATER RELIABILITY* FOR MAIN CODING SYSTEM CATEGORIES

Miscue Category	Spanish	English
Repetition (TR)	.39	.92
Word Order (WO)	**	**
Spanish Interference (SI)	**	**
English Interference (EI)	**	**
Meaningful Substitutions (MEASUB)	**	.86
Noncontextual Substitutions (NONSUB)	.99	1.00
Similar Spelling or Sound (SMSP) (SMSOU)	.94	.74
Insertions (INSRT)	.87	.69
Deletions (D)	***	.84
Corrections (→)	.97	.85

* The Pearson product-moment correlation was used for this purpose.

** Not enough instances of the miscue found in the sample to calculate interrater reliability.

*** Complete misunderstanding of what D meant by one coder.

thong break (DB), which may occur in some children because of the methodology (i.e., phonetic, syllabic methods) used to teach reading.

DISCUSSION OF RESULTS

Comparison of Bilingual and English-Monolingual Children's Miscues: English Reading

Table 2 shows the percent occurrence of each miscue per group and the t-test results calculated using the t statistic for two means (Brownlee, 1965). In general, the subcategories, nonconforming to the structure of text (NC), conforming to entire passage (DC), and conforming to preceding structure (PC) were not reliable when broken down within each main category, mainly because of the small number of occurrences (see Appendix). They have been included in a total count across categories in the table because they might say something about bilingual versus English-monolingual children's use of the text structure.

As can be noted from Table 2, 12 out of the 18 categories for which enough data were coded showed significant differences between the English-monolingual and the bilingual subjects. By putting the meaningful substitutions (MEASUB) and noncontextual substitutions (NONSUB) into one category, called total substitutions (TOTSUB), we found that for English monolinguals 56.5 percent of the substitutions are MEASUBs. In contrast, the bilingual group showed only 29 percent MEASUBs; 71 percent of the substitutions produced by this group were NONSUBs. This shows that the English-monolingual group used the semantic constraints of the text more than the bilingual children. In the case of bilingual children, the high percent of noncontextual substitutions and the large number of similar spelling miscues produced (37.5 percent

Table 2

PERCENT MISCUE OCCURRENCES AND SIGNIFICANT DIFFERENCES OF BILINGUAL AND ENGLISH-MONOLINGUAL SUBJECTS

Miscue Category	Bilingual %	English-Monolingual %	t Test	df and Signif. Level
No Response (NR)	0	.2	-	-
Requests for Help (H)	.5	.2	-18.97	14***
Repetition (TR)	10.4	9.2	2.16	14*
Word Order (WO)	.3	.9	28.39	14***
English Interference (EI)	0	0	-	-
Spanish Interference (SI)	1.9	0	-	-
Meaningful Substitutions (MEASUB)	3.00	6.1	11.62	14***
Noncontextual Substitutions (NONSUB)	7.4	4.5	6.47	14***
Similar Spelling (SMSP)	36.5	15.8	.60	14
Diphthong Breaks--Spanish (DB)	0	0	-	-
Insertions (INSRT)	3.8	9.2	9.83	14***
Deletions (D)	9.00	12.00	5.69	14**
Corrections (⟶)	12.8	13.2	4.31	14***
Nonconforming to Structure of Text (NC)	6.8	9.4	3.73	14**
Conforming to Preceding Structure (PC)	2.7	4.2	-10.19	14***
Conforming to Sentence (SC)	0	1.2	-44.98	14***
Conforming to Entire Passage (DC)	4.9	13.9	5.90	14***
Total Number of Miscues per Subject	45.9	47.22	-.47	14

*p < .05
**p < .01
***p < .001

of total miscues) seem to show a tendency toward using the graphics rather than the contextual constraints of the text while reading.

Significant differences were found within the two groups in the deletion ($p < 0.01$) and insertion ($p < 0.001$) categories. The English monolinguals were coded for more insertions and deletions than were the bilinguals. This seems to show that the English-monolingual subjects were not paying as much attention to the graphics of the text as the bilinguals, who were coded for less deletions and insertions. The bilingual students showed a higher tendency to produce repetition (TR) miscues while reading. This may reflect their unfamiliarity with the language and with a strategy for reading an unfamiliar word or sentence properly from the graphic rather than the contextual point of view. In the case of corrections (—►), significant differences were found between the two groups ($p < 0.01$); the English-monolingual students produced more correction miscues that did the bilinguals. This may show the English-monolingual readers' tendency toward paying more attention to the contextual (semantic and syntactical), rather than the graphic, aspects of the text while reading.

In the case of miscues related to the text structure or part of it, significant differences were found for the categories NC ($p < .01$) and DC ($p < .01$). The English-monolingual group showed higher occurrences of these miscues than the bilinguals. This contrasts with Cziko's (1978) findings, where seventh-grade L_1 speakers produced less NC and more DC miscues than L_2 speakers. This finding seems to show that, at third grade, monolingual English speakers are still learning to read and do not use contextual constraints as well as more mature seventh-grade readers. It is important to note, though, that the English-monolingual children produced more DC miscues (53 = 13.9 percent of total) than they did NC miscues (36 = 9.4 percent of

total). While nonsignificant, these results already show a tendency by English-monolingual readers toward using the contextual rather than than the graphic information of the text while reading. In contrast, bilingual readers produced less NC and DC miscues as well as FC and SC miscues than the English speakers. This shows that bilinguals still are making comparatively more NC miscues (25 = 6.8 percent of total) than DC miscues (18 = 4.9 percent of total) and, as such, they are not using the contextual information of the text as well as their English-speaking counterparts. In relation to the Spanish-interference miscues found in the bilingual group, they account for only 1.9 percent of all miscues produced. This seems to be consistent with Dulay and Burt (1974) and Gonzalez and Elijah (1979), who seem to suggest that L_1 has very little influence on L_2 production.

In conclusion, the data presented here seem to show that the English-monolingual children are using more of the contextual (semantic-syntactic) constraints of the text than their bilingual (Spanish/English) counterparts. They also seem to show, however, that English-monolingual third graders still have problems using contextual constraints. The finding that English-monolingual students more effectively used the contextual constraints than L_2 learners is consistent with previous research findings. Cziko (1978), Hatch (1974), Young (1972), Stafford (1976), and Tucker (1975), found that L_2 readers have trouble using contextual constraints, using graphic information instead.

Comparison of Bilingual and Spanish-Monolingual Children's Miscues: Spanish Reading

Table 3 shows the percent occurrence of each miscue per group and the significant differences in miscue occurrence among the two groups. The t statistic for two means (Brownlee, 1965) was used for this analysis.

Table 3

PERCENT MISCUE OCCURRENCES AND SIGNIFICANT DIFFERENCES OF BILINGUAL AND SPANISH-MONOLINGUAL SUBJECTS

Miscue Category	Bilingual %	Spanish-Monolingual %	t Test	df and Signif. Level
No Response (NR)	0	0	-	-
Requests for Help (H)	0	4.5	-3.88	13**
Repetition (TR)	9.8	3.0	-3.16	13**
Word Order (WO)	0	0	-	-
English Interference (EI)	4.2	1.5	-	-
Spanish Interference (SI)	.5	0	-	-
Meaningful Substitutions (MEASUB)	.9	1.5	-20.42	13***
Noncontextual Substitutions (NONSUB)	10.2	18.2	-5.93	13**
Similar Spelling (SMSP)	23.4	22.7	-1.51	13
Diphthong Breaks--Spanish (DB)	1.5	0	-18.93	13***
Insertions (INSRT)	5.10	4.5	-5.86	13***
Deletions (D)	.9	9.1	-6.08	13***
Corrections (→)	37.4	34.9	-.16	13
Nonconforming to Structure of Text (NC)	.9	0	-26.99	13***
Conforming to Preceding Structure (PC)	0	0	-	-
Conforming to Entire Passage (DC)	3.3	0	-16.66	13***
Conforming to Sentence (SC)	1.9	0	26.12	13***
Total Number of Miscues per Subject	26.75	9.43	1.52	13

*p < .05
**p < .01
***p < .001

The miscue analysis shows that 10 out of 18 variables for which t tests were calculated were significant. Again, several variables could not be used in the t test due to their low occurrence.

The total substitutions (TOTSUB) variable shows that both groups produced more noncontextual substitutions (NONSUB) (92.3 percent Spanish-monolingual, 91.7 percent bilingual) than meaningful substitutions (MEASUB) (7.7 percent Spanish-monolingual, 8.3 percent bilingual). The proportion of MEASUBs and NONSUBs is very similar for both groups. Most of the substitutions are NONSUBs, which indicates that both groups are using more graphic than contextual text constraints. Could this be because of the methodology used to teach them Spanish reading, where more emphasis is placed on sounding syllables and words than on comprehension? Or does it show that by third grade children are still at a stage where graphic use of the text prevails over reading for meaning? These questions need further study.

In regard to insertions and deletions, there are significant differences in the occurrences of these miscues within the two groups ($p < 0.01$) (see Table 3). The bilingual group makes more insertions than the Spanish-monolingual group, but the latter is categorized for more deletions. The two groups seem to be using different strategies while attempting to use contextual information. The Spanish-monolingual group seems to be using the contextual constraints more often than the bilingual group.

The Spanish monolinguals are coded for a very high percent of corrections among their miscues; the bilinguals make fewer corrections. This may show a tendency toward reading for meaning and, furthermore, a higher level of reading skills development in the Spanish subjects. There is a significant difference ($p < .01$) between the two groups in terms of English interference (EI) miscues. The bilingual group produces more (4.5 percent) interference

miscues than the Spanish monolinguals (1.5 percent). As expected, the bilinguals with more experience in English show more language interference in reading behavior, but the number of occurrences is not high enough to affect reading development. Again, this is consistent with data presented by Dulay and Burt (1974) and Gonzalez and Elijah (1979), which suggest very little influence of L_1 in L_2 production and reading development, respectively. It is interesting that the diphthong break (L3) miscue (see Appendix) appeared mainly in bilingual Spanish readers. This may be because of the methodology (mainly phonetic) and books used in teaching reading to the subjects studied.

In terms of miscues related to the contextual structure of the text, no miscues were produced by Spanish-monolingual readers while some were produced by the bilingual group (see Table 3). It is important to point out that miscues related to the categories DC and SC are produced more than the category NC by the bilinguals. This seems to suggest the bilinguals' tendency toward using the contextual constraints more than the graphic information of the text.

The picture that emerges from these data suggests more similarities in miscue production between these two groups than between the English-monolingual and the bilingual groups, in spite of the significant differences found. Both groups seem to rely more on the graphic than on the contextual constraints of the text. As noted above, this may be due to the methodology and books used or an indication that a developmental trend toward a higher level (semantic) of reading ability starts later in Spanish readers and/or in bilinguals. The fact that Spanish-monolingual speakers used contextual information more often than did bilingual students while reading in Spanish could be related to findings of the Skutnabb-Kangas and Toukomaa (1976) study of Finnish students attending Swedish schools. They found that Finnish chil-

dren's school achievement in L_2 increased in proportion to knowledge of L_1 before introduction to L_2. It may be that the bilingual children in our study started to read in L_1 (Spanish) only and were introduced to reading in L_2 before they developed good basic reading skills in L_1. This, in turn, precluded their development of reading skills in L_1, which otherwise would have been transferred to L_2.

Bilingual Children Miscue Occurrences across Languages (Spanish and English)

Table 4 shows a percent comparison of miscues made by bilingual children while reading in Spanish and English and significant differences between the two languages. Significant differences were calculated using the paired t statistics (Ostle, 1963).

Out of 18 categories for which t scores were calculated, six categories showed significant differences among the bilinguals' performance across languages. The similar spelling category ($p < .01$) shows the bilingual group producing more SMSP miscues in English than Spanish. It may be that fewer SMSP miscues should be expected in Spanish since Spanish is a phonetic language. For this reason, the category similar sound (SMSOU) was added to the coding system for the analysis of the Spanish reading data. This significant difference may show the subjects' ignorance of the English spelling system. It is an indication, too, that these students were paying more attention to the graphic than the contextual constraints of the text, particularly in English.

Table 4 shows that corrections occur significantly more ($p < .05$) in Spanish than in English. Corrections seem to have been made to correct meaningless or syntactically incorrect sentences. Definitely, the bilingual group

Table 4

BILINGUAL CHILDREN: A COMPARISON OF MISCUES PRODUCED AND SIGNIFICANT DIFFERENCES ACROSS LANGUAGES (SPANISH/ENGLISH)

Miscue Category	Spanish %	English %	t Test	df and Signif. Level
No Response (NR)	0	0	-	-
Requests for Help (H)	0	.5	-	-
Repetition (TR)	9.8	10.4	.65	7
Word Order (WO)	0	.3	1.00	7
English Interference (EI)	4.2	0	-1.51	7
Spanish Interference (SI)	.5	1.9	-	-
Meaningful Substitutions (MEASUB)	.9	3.0	2.16	7*
Noncontextual Substitutions (NONSUB)	10.2	7.4	.45	7
Similar Spelling (SMSP)	23.4	36.5	2.51	7*
Diphthong Breaks-- Spanish (DB)	1.5	0	-	-
Insertions (INSRT)	5.1	3.8	.29	7
Deletions (D)	.9	9.0	1.65	7
Corrections (→)	37.4	12.8	2.00	7*
Nonconforming to Structure of Text (NC)	.9	6.8	2.71	7*
Conforming to Preceding Structure (PC)	0	2.7	3.03	7**
Conforming to Entire Passage (DC)	3.3	4.9	1.95	7*
Conforming to Sentence (SC)	1.9	0	-1.87	7
Total Number of Miscues per Subject	26.75	45.9	.66	7

*p < .05
**p < .01
***p < .001

used the contextual constraints more when reading in L_1 than in L_2, which in turn shows a more advanced stage in Spanish reading development.

For categories concerned with conforming to the preceding structure (PC), the data show that the bilingual group produced less NC miscues in Spanish (.9 percent) than in English (6.8 percent). Again, this suggests a more advanced stage of reading development in L_1 than in L_2. At the same time, the bilingual group produced significantly more DC and SC miscues in English than in Spanish, demonstrating a trend toward increasing use of contextual constraints in reading development.

In regard to MEASUB and NONSUB, only MEASUB shows a significant difference (English better than Spanish). A total of substitutions (TOTSUB) shows that, generally, the bilingual group made more NONSUBs (91.7 percent in Spanish and 71.8 percent in English) than MEASUBs. This may suggest that by third grade the development of reading skills in L_1 as well as L_2 is still at a graphic, more than a contextual (semantic-syntactic) stage, in terms of the interactive view of reading skills development (Rumelhart, 1976).

It appears, though, that learning reading in L_1 in the bilingual group is at a more advanced level than in L_2. Corrections show a significant difference across languages (see Table 4), occurring much more in Spanish than English. This may be because children are trying to use the contextual constraints of the text more in L_1 than in L_2. We can say, then, that our data with third-grade bilingual subjects seem to show that they are still at a graphic level in both languages in terms of using the context of the text while reading, but they are in transition toward an increased use of the contextual constraints of the text. In general, subjects seem to be reading for meaning more in L_1 (Spanish) than in L_2 (English), but a trend toward contextual use of the text (a higher developmental stage in reading) appears

in the two languages. If these bilingual subjects had been allowed to develop more advanced reading skills in L_1 before introduction to L_2 reading, their reading skills in L_1 might have transferred to L_2 and they might have been using more of contextual constraints by third grade.

CONCLUSION

The purpose of this study was to compare the oral reading miscues made by bilingual subjects to those made by English- and Spanish-monolingual children and to compare bilingual subjects' miscues across languages (Spanish and English).

The taxonomy used for this study was an adaptation of one used by Cziko (1978) with seventh-grade children learning French as a second language. This taxonomy was found adaptable to different grade levels and different languages, although two new categories were needed to address the purpose of the study and make it more specific for Spanish.

The findings suggest that, in general, by third grade children are still using the graphic information of the text to a greater extent, although they are starting to use contextual information as well. This suggests support for an interactive reading model (Rumelhart, 1976) where graphic as well as contextual use of text information interact in reading development.

The comparison between the bilingual and the English-monolingual students reading in English showed that the English speakers, although still attending to the graphics, were attending more to contextual constraints of the text than were the bilingual students. English monolinguals were reading more for meaning than bilinguals, who were not completely fluent in L_2; the English monolinguals were looking closely at the semantic as well as the syntactic aspects of the text. These findings are consistent with previous research

(Cziko, 1978; Tucker, 1975; Young, 1972; and Stafford, 1976), which show that L_2 readers have difficulty using the contextual constraints of the text. The findings show that L_1 interference has little influence on L_2 production and reading. These findings are consistent with those of Dulay and Burt (1974) and Gonzalez and Elijah (1979) and should help teachers better understand the role of L_1 interference in L_2 learning.

Spanish monolinguals and bilingual students reading in Spanish were more similar in the types of miscues they produced. Both groups seemed to be looking at the graphic aspects of the text, although the Spanish-monolingual group seemed to be using the context better, at least in their use of corrections to get meaning from the text.

When the bilinguals' performance was compared in L_1 (Spanish) and L_2 (English), they showed better performance in the use of contextual information in L_1 than ~~in~~ L_2. In English, they seemed to show that they used mainly graphic information for reading. In Spanish, they produced many corrections that were an indication of contextual information use. It may be that our subjects started to read in L_1 and were introduced to L_2 before having the basic reading skills in L_1. If this is true, these findings seem to be supported by research done in Sweden with Finnish immigrants (Skutnabb-Kangas and Toukomaa, 1976). These research findings suggest that children who developed language skills in L_1 before being introduced to L_2 showed higher achievement levels in school than those who learned L_2 before having a good basic knowledge of L_1.

In general, the data showed a trend moving from using a graphic-constraints strategy to increased attention to contextual constraints. The groups reading in L_1 (Spanish and English monolinguals) seemed to be using contextual constraints more often than the bilinguals reading in L_1 and

L_2. The fact that all the groups seemed to be in transition, in terms of the use of constraints from the texts, appeared to predict that third grade may be an optimal time to introduce class exercises that induce students to use contextual constraints as they read.

Further research on this issue will be relevant not only to teachers and other practitioners but also to people supporting an interactive model of reading, such as the one proposed by Rumelhart (1976), and to psycholinguists in general.

In regard to the bilingual subjects, the results of the study raise the question of when L_2 reading should be introduced to bilingual children who were introduced to L_1 first. Should L_2 reading be introduced immediately as they start learning English as a second language in schools, or should the emphasis be put on improving their L_1 reading skills while oral language development in L_2 occurs? This is a question that future research should address. Furthermore, research on how reading skills are transferred from L_1 to L_2 is very much needed. The data for this study seem to show that it is more advisable to introduce these exercises in the stronger language. Finally, it is recommended that studies in the area of miscue analysis should be done not only across languages but also across grade levels to find developmental trends in information processing in reading. Because of the results of this study, it is suggested that an interactive theory of reading behavior (Rumelhart, 1976) may be the proper model to explain these developmental trends.

REFERENCES

Biemiller, A. The Development of the Use of Graphic and Contextual Information as Children Learn to Read. **Reading Research Quarterly**, 1970, 6(1), 75-96.

Brownlee, K. A. **Statistical Theory and Methodology in Science and Engineering**. New York: John Wiley and Sons, 1965.

Cowan, J. R., and Sarmed, Z. Reading Performance of Bilingual Children According to Type of School and Home Language. **Working Papers on Bilingualism**, 1976, 2, 74-114.

Cummins, J. The Influence of Bilingualism on Cognitive Growth: A Synthesis of Research Findings. **Working Papers on Bilingualism**, 1975, 13.

Cziko, G. A. **An Analysis and Comparison of First and Second Language Acquisition**. Unpublished doctoral dissertation, McGill University, Montreal, Canada, 1978.

_____, and Sarmed, Z. **The Effects of Language Sequencing on the Development of Bilingual Reading Skills**. Montreal, Canada: McGill University, 1976.

Dulay, H. C., and Burt, M. K. Errors and Strategies in Child Second Language Acquisition. **TESOL Quarterly**, 1984, 8(2), 129-136.

Fry, E. A Readability Formula That Saves Time. **Journal of Reading**, 1968, 11(7), 514-515.

Gonzalez, P. C., and Elijah, D. V. Error Patterns of Bilingual Readers. **NABE Journal**, 1979, 3(3).

Goodman, K. S. Analysis of Oral Reading Miscues: Applied Psycholinguistics. **Reading Research Quarterly, 1969**, 5(1), 9-30.

_____. Reading, A Psycholinguistic Guessing Game. **Journal of the Reading Specialist**, 1967, 6, 126-135.

Hatch, E. Research on Reading a Second Language. **Journal of Reading Behavior**, 1974, 6(1), 53-61.

Hood, J. 'Qualitative Analysis of Oral Reading Errors: The Inter-Judge Reliability of Scores. **Reading Research Quarterly**, 1975-1976, 11(4), 577-598.

MacNamara, J. Comparative Studies of Reading and Problem Solving in Two Languages. **TESOL Quarterly**, 1970, 4, 107-116.

Oller, J. W. Dictation as a Test of ESL Proficiency. In H. B. Allen and R. N. Campbell (Eds.), **Teaching English as a Second Language**. New York: McGraw-Hill, 1972.

Ostle, B. **Statistics in Research**. Ames: Iowa State University Press, 1963.

Pastor, A., and Gomez-Tijera, C. **Por el Mundo del Cuento y la Aventura**. River Forest, Illinois: Laidlaw Brothers Publishers, 1962-1977.

Reading in Two Languages. Northdale, New Jersey: Santillana Publishing Co., 1976.

Rumelhart, D. E. Toward an Interaction Model of Reading. Technical Report No. 56. San Diego: University of California, San Diego, Center for Human Information Processing, 1976.

Skutnabb-Kangas, T., and Toukomaa, P. **Teaching Migrant Children's Mother Tongue and Learning the Language of the Host Country in the Context of the Sociocultural Situation of the Migrant Family**. Helsinki: The Finnish National Commission for UNESCO, 1976.

Stafford, C. K. **A Psycholinguistic Analysis of ESL Reading Difficulties with Teaching Applications**. Unpublished masters thesis, University of California, Los Angeles, 1976.

Theberge, R. **Error Analysis, Interlanguage, and Second Language Reading Strategies**. Unpublished masters thesis. University of Ottawa, 1976.

Tucker, G. R. The Development of Reading Skills within a Bilingual Program. In S. S. Smiley and J. C. Towner (Eds.), **Language and Reading**. Bellingham, Washington: Sixth Western Washington Symposium on Learning, 1975.

Weber, R.-M. A Linguistic Analysis of First-Grade Reading Errors. Reading Research Quarterly, 1970, 5(3), 427-451.

Young, F. M. An Analysis of the Miscues Selected Mexican-American Readers Made when Reading from Their Fifth Grade Instructional Materials up to Their Frustrational Level. Unpublished masters thesis, New Mexico State University, 1972.

Appendix

CODING SYSTEM FOR MISCUE ANALYSIS

The criteria for counting miscues (any deviation from text) were adapted from those of Cziko (1978), Hood (1975-1976), Biemiller (1970), and Goodman (1969). If the miscue is repeated more than once by the reader of the same text (i.e., Ill/I'll, no response for same unknown word), a tally will be kept, but the miscue will be recorded in the total only once for each reading passage. Names should not be included as miscues.

No Response	NR	Reader looks at an unknown word, makes no attempt to read it aloud, pauses, and continues to read. Example: The ____ family*/Gonzalez.
Request for Help	H	Reader verbally expresses need for help. Example: "What's this word?"
Repetition[X]	TR	Reader repeats correctly part or all of a word or words. (If reader repeats first two syllables, don't count as TR.) Example: I'll, I'll, I'll.
Word Order	WO	Reader reverses or changes order of text or two syllables within one word. Example: Said Pat/Pat said feria/fiera

*Actual responses precede the slanted line; the text follows.

X = Changes in original coding, but coding for the study was done according to original.

Appendix (continued)

Spanish Interference	SI	Reader uses Spanish pronunciation or syntax for English text. Example: Ja ja/ya ya
Meaningful Substitution	MSUB	Reader exchanges word or words that do not alter the meaning. Examples: a/the a lot of/lots of it/the ball
Noncontextual Substitution	NONSUB	Reader exchanges meaningful utterances that alter the meaning and cannot be categorized as Similar Spelling. Examples: apple/block juego/hueco
Similar Spelling	SMSP	Reader begins word with correct letter but some or all subsequent letters are not identical to the text. Examples: the/this this plants/these plants lots/lost make/makes mara/mira
Diphthong Break	DB	In Spanish reading, when breaking words into syllables, children will break diphthongs. Examples: llu-via (right) llu-vi-a (wrong) cie-lo (right) ci-e-lo (wrong)
Similar Sound	SMSOU	Found mainly in Spanish. Examples: carro/caro perro/pero

Appendix (continued)

Insertion	INSRT	Reader adds entire word or inflection to the text. Examples: lands/land sees/see Ralph said, and/Ralph said. he cannot/he can't a mi papa/a papa
Deletion	D	Reader omits entire line, word, or inflection from text. Example: a boy and girl/a boy and a girl land/lands did not see Ralph after her/ did not see Ralph run after her I'm/I am other/others la loras/las loras len/leer
Corrections	→	Reader corrects self after reading any type of miscue. The symbol (→) is used following miscue. Example: plants have always (→) ways NONSUB (→) did (→) they did D NC (→)

The following criteria will be used in conjunction with the previous categories. A meaningful miscue includes the following: MEASUB - WO - INSRT - D). Example: D NC.

Nonconforming to Structure	NC	Meaningful miscue that does not conform to previous syntactic and semantic constraints of the sentence. Example: there is lands in the city/ there is land in the city

Appendix (continued)

Conforming to Preceding Structure	PC	Meaningful miscues that conform only to preceding syntactic and semantic structures of the sentence. If one reads only up to and through miscue, the passage still "makes sense." Example: and Pat did hit it the ball/ and Pat did hit the ball there is a/there is never there never/there is never
Conforming to Entire Passage	DC	Meaningful miscue that conforms to both syntactic and semantic constraints of entire text. Example: didn't see the ball fall/ didn't see it fall MEASUB - DC
Conforming to Sentence	SC	Meaningful miscue that conforms only to the syntactic and semantic structure of the text but not to the passage. The sentence makes sense by itself but not as part of a passage or a paragraph. Example: Carlos was doing his homework. They enjoy reading. (Reader uses they instead of he.)
Totals	TMSOS	Total number of miscues will be tabulated.
	TNONSUB	Total number of nonsense substitutions will be tabulated.
	T →	Total number of corrections will be tabulated.

Flora V. Rodriguez-Brown is an Assistant Professor of Education at the University of Illinois at Chicago. Previously, she served as Evaluation Coordinator and Educational Consultant to the State of Illinois Bilingual Programs. She received her PhD in Educational Psychology from the University of Illinois, Champaign-Urbana.

Dr. Rodriguez-Brown has done research in the areas of reading and language proficiency with bilingual children. She has authored and coauthored evaluation reports as well as research papers for scholarly publications.

While working on this study, Lynne S. Yirchott was a research assistant at the University of Illinois at Chicago. Before that, she had been a public school teacher.

Returning to California, Ms. Yirchott worked at a center at Stanford University dedicated to enhancing the study of global education in elementary and secondary school settings. She now lives in Seoul, Korea.

Ms. Yirchott received a master's degree in reading from California State University, Northridge, and another master's degree in linguistics in the area of English as a second language from Northeastern Illinois University, Chicago.