DOCUMENT RESUME

ED 193 942 FL 011 907

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TITLE The Relationship of Student and Home Variables to Language Proficiency and Reading Achievement of Bilingual Children.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE 80
GRANT NIE-G-78-0134
NOTE 31p.; Paper presented at the Annual Meeting of the American Educational Research Association (Boston, MA, April 7-11, 1980).

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Bilingual Education; Bilingual Students; Elementary Education; *English (Second Language); *Family Influence; Language Dominance; Language of Instruction; *Language Proficiency; Language Research; *Reading Achievement; Social Influences; Sociolinguistics

ABSTRACT

This study explores the relationship between different home and school variables and reading achievement in bilingual children. The subjects of the study are 130 first- and third-grade children attending bilingual programs. Language proficiency and dominance tests were administered to the children and a questionnaire was sent to their parents. The findings suggest that length of residence in the U. S. is one of the main variables in determining achievement in L2. The discussion relates the methodology and findings to implications for bilingual instruction as well as to research needs that could help teachers and school systems understand and serve better the needs of culturally and linguistically different childre... (Author/AMH)

The Relationship of Student and Home Variables to Language Proficiency and Reading Achievement of Bilingual Children

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Paper Presented at the AERA 1980 Meeting
in Boston, Massachusetts, April 7-11, 1980

The data used in this paper was collected as part of a study supported by the National Institute of Education, Grant Number NIE-G-78-0134.

We wish to thank Dr. Edward H. Haertel for his advise on the analysis and interpretation of data for this study.

I. Introduction

The issue of educating linguistically and culturally different children is not a new one to the American educational system but the Civil Rights movement and, particularly, the enactment of the Bilingual Education Act into the Elementary and Secondary Education Act of 1965 have caused people to look at this issue from different perspectives. The view that linguistically and culturally different children are "different" (Williams, 1976) brought up the idea that they may not be in deficit linguistically and/or culturally. Furthermore, if their differences were taken into account in their educational process; then, the system could better serve the needs of these children.

To provide educational programs for these children, a research base is needed to determine their similarities and differences with the mainstream population of the Unites States and to determine their particular needs, attitudes, and aspirations. Reading is one of the most emphasized areas in the school curriculum and research in reading with "bilingual"[1] children is very much needed.

The present study tries to explore the relationship between different home and school variables and reading achievement. We hope that findings could be useful to teachers and other people involved in the design and development of bilingual programs. This way the implementation of such programs and the general educational needs of bilingual children can be better served and education will be more relevant to these children.

[1] The term "bilingual" in the present paper will be applied to children whose native language is not English, who have varying levels of English proficiency, but lack the competence to fully participate in a monolingual English class.

II. Review of literature

In general, theories and research in reading are directed toward first language learners and very little has been done to study the reading process in a second language. Research directed to monolingual readers has attempted to study the sensibility of children and/or adults to semantic and syntactic constraints as opposed to graphic information. Other studies have analyzed the types of errors made by children (Goodman, 1969 and Weber, 1970). Kolers (1973) found that adult readers were more sensitive to contextual (syntactic and semantic) constraints than to graphic information. Golinkoff (1975) found that good readers pay little attention to the graphic aspects of the text; they rather use the contextual information more effectively. Biemiller (1970) has described strategies in the use of contextual versus graphic information used by first grade readers and discovered some sequential regularity in occurrence of the strategies.

More recently, several studies have been done trying to study the relationship between family and parental background and socio-economic status and reading achievement. Hammer and Alexander (1979) studied the relation of parental attitudes toward reading disabilities and children's reading ability. No relationship was found between parental attitudes across age, sex, occupation and education, and the reading ability of the children studied.

Fredrick, et al. (1979) related reading gains to school characteristics among Black and Caucasian students in Chicago schools. They found that attendance, amount of money spent per pupil, the size of the school and the teacher's education were directly related to students' reading achievement. The best predictors for reading achievement gains in the

lower grades were poverty level and percent of Caucasians in a school. Poverty level showed a negative effect while number of Caucasians in a school was positively related to school achievement. Reading achievement at age ten was the best predictor for reading achievement in the intermediate and upper grades. Mavrovenes (1978) compared the language development of disabled and competent secondary school readers. Besides the difference in reading levels, differences in parental education and occupation were found between the two groups. Results showed that disabled readers lacked language development and came from lower SES families than the competent readers. These findings suggest that strengthening language development may raise the reading ability of disabled students. Sizemore (1972) compared the family background, school context and teacher effects in white and Black students. Thomas (1970) and Linn (1955) studied the influence of family and home environment on the reading achievement of first graders.

Edmonds (1977) found that pupil family background neither caused nor produced school instructional effectiveness. Hirst (1969) did a longitudinal study with kindergarten and first grade students to determine predictor variables of future success in reading and arithmetic. They found ten predictors, mainly testing and teacher related, but two of these predictors were socio-economic status and education of the mother. Age and intelligence were not good predictors of future reading behavior.

In regard to second language reading, very little research has been done. Nicolson (1977) and Mes-Prat and Edwards (1978) studied the sensibility of second language readers to orthographic constraints of the text. Their subjects were French-English bilinguals. Macnamara (1968) suggests that second language readers have difficulty using contextual constraints.

Stafford (1976) and Young (1972) studied reading errors in second language readers and they both found that these readers cannot fully use contextual constraints while reading so they rely more on the graphics of the text. Oller (1972) studied strategies such as eye movement and fixation used by second language readers to compensate for their lack of knowledge of the language, and he found differences in the processing of information in short-term memory.

Hatch (1974) and Hatch, et al. (1974) used a letter cancellation technique to compare native and non-native English speakers' use of contextual and graphic information while reading.

Very few studies in second language reading have been carried out in classroom settings. Tucker (1975) studied reading comprehension longitudinally on children attending French immersion programs in Canada. His findings suggest that: 1) The subjects performed well on word-discrimination tasks in spite of their poor knowledge of grammar. 2) Different processes and strategies were used by first and second language readers; namely a) second language readers relied more heavily on word-discrimination to compensate for their lack of contextual knowledge, and b) second language readers relied more heavily on graphic information. This last strategy has already been suggested by Stafford (1976), Young (1972), Oller (1972), and Hatch (1974).

Swain (1974) found that children attending immersion programs who were introduced to reading in French before English transferred more reading skills from French to English reading than the ones who learned first in English and then in French.

Studies by Cummins (1976), Cziko (1976), and Tucker (1975) found a correlation between second language and native language reading skills.

Findings seem to indicate that the effective use of contextual information in reading is transferable but are not consistent with the current view that second language reading is dependent on the overall proficiency in the second language.

Through the years, several people have been interested in the relationship of learning to read in the native language (L1) vs. the second language (L2). Engle (1975) reviewed studies done in this area and found that most of the studies she reviewed presented flaws in design and/or implementation. She found that while some of the studies showed the L1 approach to learning reading produced greater gains (Modiano, 1968; Modiano, 1972; Ramos et al, 1967; UNESCO, 1953), a comparable number of studies showed the L2 approach as being more effective (Lambert and Tucker, 1972; Pozas and Pozas, 1956; Malherbe, 1956). Cziko (1976) has studied the effect on the language sequence used to teach reading to bilinguals and found no significant effects that would allow them to determine which sequence is better. More recently, some researchers (Bowen, 1977; Tucker, 1977) have argued the need to look at social rather than linguistic and pedagogical factors in order to explain the academic achievement of bilingual children. Bowen (1977) suggests that there are enough data available to show that the language medium of instruction does not necessarily determine academic success. Furthermore, he suggests that the language medium of instruction should be determined according to social rather than linguistic characteristics of the children; Tucker (1977) makes the same conclusions.

A study carried out by UNESCO (Skutnabb-Kangas and Toukomaa, 1976) seems to show that it would be counterproductive to introduce a second language of instruction to children who lack development in their native language. This could lead to "semilingualism" (a term used to describe

low proficiency in both native and second language) and semilingualism will produce low achievers.

Only two studies were found which try to relate home characteristics of Spanish-English bilingual students in the USA and their general or reading achievement levels. Alvera-Benitez, 1977 studied the relationship between home background and reading achievement of fourth grade Puerto Rican students. More recently, Baral (1979) compared the characteristics of recent Hispanic immigrants and American native-born students of Hispanic background to their general school achievement. The study found higher achievement levels among U.S. natives than recent immigrants. The same study showed that U.S. natives' family backgrounds differed from the new immigrants in terms of parental education level and father's occupation. The natives' parents had a higher level of education and their fathers had better-paid occupations than the fathers of new immigrants.

Cummins (1979) suggests that the level of competence attained by bilingual children in both languages could be an intervening variable in regard to the effect of bilingualism on the cognitive and academic development of these children. Cummins suggests that two thresholds occur in the development of bilingual subjects. If children show a low level of proficiency in both languages they are at the lower threshold of bilingual competence and the effects of this situation on cognition are negative, especially in terms of achievement. In the case of children who are bilingual but who show dominance and native-like competence in one language, their bilingualism will not produce either positive or negative cognitive effects. In contrast, children who have higher levels of competence in both native and second language will show positive cognitive effects in their learning and academic achievement. Cummins (1979) proposes that

the competence a child develops in the second language is practically function of the level of competence in the first language that the child attained when he was first exposed to the second language. In turn, Cummins refers to studies done by Macnamara, Svare and Homer (1976) and Skutnabb-Kangas and Taukomaa (1976) which support his interdependence hypothesis that a good quality linguistic experience in the home is a pre-requisite for acquiring literacy skills and that the ability to extract meaning from printed text can be transferred easily from one language to another. Cummins' interdependence hypothesis explains and supports these findings. Studies done in minority language situations show that children who learn in L1 first in school are more successful achievers than those who learn first in L2. It may be that certain aspects of the minority child's language are not fully developed on entry to school and their lack of cognitive and linguistic development could hamper future learning. This is an issue which should not be overlooked if we want "bilingual" children to succeed in a L2 classroom.

II. Statement and rationale of the problem.

As noted from the previous review of literature, reading research done with Spanish-English bilinguals in the United States is scarce. Most studies in reading with L2 subjects have been carried out with high school level populations and outside the United States (Tucker, 1975; Cummins, 1975, Cziko, 1976; Cziko, 1978; Cowan and Sarmed, 1976, among others).

Reading studies done with L2 learners show contrasting results. Studies by Fathman (1977) and Oller (1972) seem to show that oral language knowledge is a prerequisite for reading; however, Swain (1974) shows that there is not a direct relationship between the language one learns to read

in and subsequent reading ability in L2. Studies by Cummins (1976) and Cziko (1976) did not find a significant relationship between language sequencing for reading instruction and reading achievement in L2. The same studies found no relationship between language sequencing in beginning reading and the transfer of reading skills across languages. These results may be affected by the type of populations used in these studies. Middle-class subjects from well established families learning the language of a minority were the major populations studied. Research done in Sweden (Skutnabb-Kangas and Toukoma, 1976) with low socio-economic status Finnish immigrants suggests that native language development is a prerequisite for literacy in the first as well as second language of the child. This supports the view that children who have not developed the first language well when they get to school should be taught in the native language in school to increase their chances of school success in the native as well as their second language.

Although all these studies have shed some light on the problem of learning to read and literacy in a bilingual situation, very few of them have been carried out with elementary school children in the United States and, even fewer, have looked at the possible relation between home environment and reading achievement. Bilingual students in the United States usually have a low socio-economic level and many of them are newcomers to the country and therefore differ from the populations reviewed above. Even though their parents are willing to help these children in their school work, they generally lack the education and skills to do so. Often the parents do not serve as adequate role models for an educated citizenry.

The present study purports to investigate the relationship between selected home and student variables and reading achievement with first and third grade bilingual students attending schools in the United States. Specifically, this paper will address the following question: What are the relationships of home and student variables to students' language proficiency in L1 and L2 and reading achievement in L2.

IV. Method

A. Subjects.

The subjects of this study were 130 children attending first and third grade in two districts in the State of Illinois. All these children attended Spanish-English bilingual programs due to their lack of proficiency in English and inability to function well in a monolingual English classroom. Sixty of these children were first graders who attended four different schools in the two districts. There were thirty boys and thirty girls in the first grade sample. Thirty-seven of them were receiving reading instruction only in English, while twenty-three were learning to read concurrently in Spanish and English. Language of reading instruction was chosen mainly in relation to each child's oral language proficiency in English. The mean age for the first grade subjects was 81.2 months (ranging from 78 to 110 months) and they had been in the United States for an average of 4.8 years when the data were collected.

The third grade sample was composed of 70 children attending five different schools in two school districts. There were thirty-six girls and thirty-four boys in the sample. Thirty-four children were learning to read only in English, while thirty-six children were learning to read in Spanish and English concurrently. Teachers used students' English language profi-

ciency to place these children in reading in L1 or L1-L2 concurrently. The range of ages for third-grade children was 89 to 141 months and the mean age was 92.2 months. These children have been in the United States an average of 5.8 years when the data was collected.

B. Instruments.

The following instruments were administered to the subjects participating in the study.

1. English language proficiency data were collected through the Functional Language Survey. This instrument was developed by the Chicago Board of Education to determine the language proficiency of Low English Proficiency and Skills (LEPS) children as required by Civil Rights guidelines. As originally developed, the survey places a child in one of the five English proficiency levels defined by the Lau Guidelines. Children rated in the lower three levels of English proficiency are considered in need of bilingual education.

In previous administrations in Chicago in 1978, the Functional Language Survey has had a reliability of .84 with six-year-olds and a reliability of .90 with eight-year-old children.

2. English reading achievement data were collected by using the Test of Reading from Guidance Testing Associates, St. Mary's College, San Antonio, Texas. This is a series of reading tests which has four parallel forms, two in Spanish and two in English. The tests come in five levels of difficulty. Levels One measures vocabulary and comprehens and Level Two through Five measure vocabulary, comprehension, and speed of comprehension.

Although these tests were developed several years ago, State of Illinois norms for the tests were established in 1976 and the tests have

shown high reliability in Illinois. Cohen and Rodriguez-Brown (1977) and Rodriguez-Brown (1977), reported KR-20's of .96 for Level One and .95 for Level Two.

For the present study, an English language form of Level One of the test was administered to first graders. An English language form of Level Two was administered to third graders.

3. The James Language Dominance Test by Peter James from Learning Concepts was used to determine language proficiency in Spanish. This test is designed to assess language dominance in Spanish-English bilingual children. It is a test of oral vocabulary in Spanish and in English. Twenty items in each language measure oral production and twenty measure oral comprehension. A difference of 5 points between the two languages determine language dominance in either Spanish or English. This is an individually administered pictorial test. Students are either asked to identify orally a pictured object, or they are asked to find the picture that matches the word spoken by the tester. For this study, the Spanish test was used to determine each student's level of Spanish proficiency.

State of Illinois norms established by Rodriguez-Brown (1977) showed that KR-20 for the James Language Dominance Test was .92 for first grader and .89 for third graders.

4. The Parent's Questionnaire

A bilingual parent's questionnaire was developed to collect general information about the family, as well as to learn about the parents' and children's language proficiency, language preference and language use at home and in the community. Table 1 lists some of the data collected through the questionnaire.

Table 1

Data Collected from Parents' Questionnaire

1. Number of years in the USA mainland
2. Size of the family
3. Place of birth of parents and child
4. Parent's Education
5. Parents' Occupation
6. Parents' oral and reading proficiency in both languages
7. Parents' rating of the child's oral and reading proficiency
8. Language use at home among different members of the family (i.e. parents to children, children to parents, child to older siblings, child to younger siblings).
9. Language preference by student and parents (to radio, watch T.V. or reading).
10. Neighborhood description
11. Attitude of parents toward bilingual programs.

3. Procedure:

The data reported in this study were collected as part of a larger study on reading with bilingual students that was reported to the National Institute of Education (see Rodriguez-Brown, 1979). As part of the larger study, several instruments were administered to children as pretests in October 1978 and posttests in May 1979. The test scores used in this paper are the May posttest scores from that study.

First graders were administered the Test of Reading, Level 1 (English form) from Guidance Testing Associates. Third graders were given Level 2 of the same test. Since the test has parallel forms, the test given in Spanish and in English were different forms of the same test. The reading tests were administered to groups of students by trained test administrators.

As often as possible, two test adminsitrators were present to facilitate the testing and make sure children understood their task.

Subsequently, each child was tested individually in Spanish and English proficiency. The Functional Language Survey was administered by a native English speaker to determine the level of English language proficiency. The James Language Dominance Test-Spanish form was then administered by a native Spanish speaker to measure Spanish language proficiency. It was not always possible to arrange for another test administration if a child was absent on a testing day.

In addition to testing children, data were collected form a parent questionnaire that was sent home with each child involved in the project. Parents who did not return the questionnaire within three days were sent a second copy of the questionnaire. The rate of response was 58%. The relatively low rate of response probably reflects the hesitancy of any undocumented aliens to answer questions such as those about their birthplace and length of residency in the United States.

After collection, all data were coded, punched and verified in preparation for data analysis.

D. Data Analysis

Frequencies of codes for each variable were checked and descriptive statistics were generated for all test scores and for all items in the parent questionnaire. The next step was reducing items from the parent questionnaire to a smaller set of relatively uncorrelated student and home variables. Many home variables were of potential interest, but collinearity among variables could produce problems in performing regression analyses. For example, although father's reading language preference and mother's reading language preference might be of interest in predicting reading achievement, they were too highly correlated to be used in some regression

analyses. So these two items were combined with other items to form the variable "parent's language preference". Other student and home variables were formed in this manner.

The final set of variables is described in Table 2. The three criterion variables are the child's Spanish proficiency, English proficiency, and English reading achievement scores. Student and home variables measured by the parent questionnaire include community Hispanic influence, socioeconomic status, parents' English proficiency, parents' Spanish proficiency, parents' language preference, student's language preference, and length of U.S. residency.

Missing data were a significant problem in the data analysis. Because of missing test scores or unreturned or incomplete parent questionnaires, complete data were available for only 20 out of 60 first graders and 39 out of 70 third graders. This introduces an unknown bias into any interpretation drawn from the remaining data.

Means, standard deviations and Pearson product-moment correlation coefficients were computed for all variables for each grade. In predicting each dependent variable, we wanted to consider not only the home and student variables, but also the interactions of home variables with each other and with different schools. Because of the limited sample size, it was necessary to limit the number of interaction terms entering the regression analysis. Possible candidates for significance were screened by performing regression analyses with each pair of variables and their interaction. Only interaction terms that were significant in these preliminary analyses were included with home and school variables in the final multiple regression analyses.

Three stepwise regression analyses were performed for Grade 1 and three were performed for Grade 2. The dependent variables for each of the

Table 2

Variable Description

Variables	Description of Variables and Coding or Comments
Dependent Variables	
Spanish Proficiency	Total score on James Language Dominance Test (vocabulary test); 40 items.
English Proficiency	Proficiency level on Functional Language Survey (sum of oral production, and comprehension subscales); 15 items.
English Reading Achievement	For Grade 1: Total score on Level 1 of Test of Reading - English form (sum of vocabulary and comprehension subscales), 80 items. For Grade 3: Total score on Level 2 of Test of Reading - English form (sum of vocabulary, comprehension, and speed of comprehension subscales), 110 items.
Independent Variables	
Community Hispanic	Composite based on neighbors' spoken language and country of origin. Low influence=1, high influence=3.
Socioeconomic Status	Composite based on parents' education and parents' occupations. Low SES=1, high SES=4.
Parents' English Proficiency	Average self-rating for mother and father. Do not use it at all=1, very little=2, adequate =3, good=4, native=5.
Parents' Spanish Proficiency	Average self-rating for mother and father. Do not use it at all=1, very little=2, adequate =3, good=4, native=5.
Parents' Language Preference	Average of 10 items addressing mother and father's language preference in and out of the home, when reading and when using the radio and television. Spanish=1, English=3.
Student's Language Preference	Average of four items addressing student's language preference at home, when reading, and when using the radio and television. Spanish=1, English=3.
U.S. Residency	Length of time family has lived on the U.S. mainland. Less than 6 months=1, 6 months to 2 years=2, 2.1 to 5 years=3, 5.1 to 10 years =4, 10.1 to 20 years=5.
School	The Grade 1 analysis involved four schools and the Grade 3 analysis involved five schools. Dummy variables were created for all but one school in each analysis.

three analyses were children's Spanish proficiency, English proficiency, and English reading achievement.

V. Results and Discussion

Means, standard deviations, and correlations for all variables are presanted for Grade 1 in Table 3. Only length of U.S. residency (.66) and student's language preference (.45) showed significant positive correlations with the child's Spanish proficiency. The results suggest that the longer a family has been in the United States, the higher the proficiency in Spanish shown by first grade children. At the same time, results show that if the student shows a preference for English his Spanish proficiency is high. It may be that these results are related to the high correlation between Spanish and English proficiency. A student that has been here long and knows English as well as Spanish may show positive attitudes toward the two languages while students who are new in the USA and are faced with a new language may react negatively toward the native language. This attitude, in turn, may slow down his/her language development in Spanish. The relationship among attitudes toward languages and language proficiency is an issue that should be studied deeply in the case of linguistic minorities in the USA.

U.S. residency (.46) and parent's language preference (.41) were strongly related to children's English proficiency. English language proficiency improves with length of time the family has lived in the USA. The parents' preference for English language to read, watch T.V., and listen to the radio is positively related to English proficiency. These findings suggest the parents can be an important asset in their children learning of English by first grade. The findings show the need for the school and

Table 3

Grade 1: Descriptive Statistics for All Variables*

Variables	N	$\bar{X}$	SD	Correlation with Dependent Variables: Spanish Proficiency (N= 21)	English Proficiency (N= 23)	English Reading Achievement (N= 20)
Independent Variables						
Community Hispanic Influence		2.26	.42	.10	.16	-.18
Socioeconomic Status		1.84	.58	.30	.29	-.14
Parents' English Proficiency		2.09	1.15	.31	.38	-.03
Parents' Spanish Proficiency		3.74	.71	.28	.27	-.15
Parents' Language Preference		1.59	.44	.35	.41*	.03
Student's Language Preference		2.25	.57	.45*	.36	.07
U.S. Residency		3.48	1.04	.66**	.46*	-.03
School 1	9			.11	.04	-.38
School 2	9			.02	.09	.37
School 3	3			-.08	-.11	.11
School 4	2			-.13	-.09	-.08
Dependent Variables						
Spanish Proficiency		36.38	3.67	--	.91***	.17
English Proficiency		4.26	.96	--	--	.08
English Reading Achievement		23.71	16.36	--	--	--

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

social service agencies to provide services for parents to learn English which, in turn, will facilitate their children learning of L2. Title VII ESEA guidelines already show support for this need by providing support for community and parental school activities and training which will enhance their learning of English and their taking a more active role in school related matters.

In Grade 1, no school or home variables were significantly related to reading achievement. Two dependent variables, Spanish proficiency and English proficiency had a correlation of .91 which was significant at the .01 level. The fact that Spanish (L1) and English (L2) are so highly correlated supports previous research findings by Cummins (1976), Cziko (1976), and Tucker (1975) who found a correlation between first and second language reading skills. Skutnabb-Kangas and Toukomaa (1976), working with new Finnish immigrants to Sweden with similar SES characteristics to language minorities in the USA, found that development in L1 enhances development in L2. They have shown that children who are introduced to L2 before they attain enough language development in L1 may show counterproductive effects in their language development, a phenomenon which they call "semilingualism" which seems to hamper general school achievement in later years.

Descriptive statistics of all variables for Grade 3 are presented in Table 4. The mean value for each home variable was similar for the samples of Grade 1 students and Grade 3 students. However, none of the Grade 3 home variables were significantly related to Spanish proficiency, English proficiency or English reading achievement. The dummy variable for School 5 did have a strong negative correlation with English reading achievement, i.e., students in School 5 were much weaker in English reading than students in other schools. This finding could be expected since School 5

Table 4

Grade 3: Descriptive Statistics for All Variables

Variables	N	$\bar{X}$	SD	Correlation with Dependent Variables: Spanish Proficiency (N= 39)	English Proficiency (N= 39)	English Reading Achievement (N= 39)
Independent Variables						
Community Hispanic Influence		2.13	.32	-.02	-.12	.04
Socioeconomic Status		1.62	.79	.13	.27	.05
Parents' English Proficiency		1.77	.90	.02	.12	.08
Parents' Spanish Proficiency		3.86	1.04	-.12	.10	.20
Parents' Language Preference		1.42	.39	.12	-.05	.18
Student's Language Preference		2.23	.64	.06	.27	.02
U.S. Residency		2.95	1.38	-.17	.15	-.13
School 1	8			.10	.06	.06
School 2	6			.13	.09	.05
School 3	12			-.18	.25	.29
School 4	5			.00	-.25	.20
School 5	8			-.01	-.22	-.61***
Dependent Variables						
Spanish Proficiency		31.41	12.89	--	.42**	.23
English Proficiency		3.72	1.41	--	--	.13
English Reading Achievement		30.90	25.99	--	--	--

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

third grade children were learning reading in Spanish only and they were being introduced to reading in English as part of the English as a Second Language program.

Spanish proficiency and English proficiency were strongly correlated, as they were in Grade 1, but the relationship was not as strong for Grade 3 students. Again, the positive correlation between Spanish (L1) and English (L2) proficiency is supported by studies which show the development of L1 as enhancing L2 learning (Cummins, 1976, Cziko, 1976, Tucker, 1975, Skutnabb-Kangas and Toukomaa, 1976). Since the correlation is less strong by grade 3, it may be that the basic language development required in L1 to enhance L2 learning is reached by children during the first years of schooling. These findings could be related to Cummins' (1979) interdependence hypothesis. By grade 3, it seems the development of L2 is less dependent on L1 knowledge. This finding provides implications for bilingual education program design in regard to the emphasis given to L1 and L2 in their curriculum at different grade levels. It has implications for future research, too, because it shows a need for research on the role of transfer in the learning of L2.

The results of stepwise regression analyses for both Grade 1 and Grade 3 are presented in Table 5. When inspecting correlations for Grade 1 (see Table 3), both length of U.S. residency and a student's language preference were related to Spanish proficiency. But when home and school variables were considered together in a multiple regression analysis, only U.S. residency was a significant predictor of Spanish proficiency, accounting for 43% of the variance. Again, it seems that children from families who have been in the USA between five and ten years may come from better established families (i.e. parents may have better-paid jobs, know more English, and the

Table 5

Stepwise Regression Summary

	Dependent Variables			
	Grade 1		Grade 3	
	Spanish Proficiency	English Proficiency	English Proficiency	English Reading Achievement
Number of Subjects	21	23	39	39
Constant	27.40	2.78	1.74	0.0
Weights for Independent Variables				
U.S. Residency	2.48**	.43*		
Student's Language Preference			.75*	
School 1				33.88**
School 2				34.17*
School 3			.99*	42.17***
School 4				44.60***
Percent of Variance Explained	.43	.21	.17	.30

* $p < .05$
** $p < .01$
*** $0 < .001$

family, in general, may feel better in their new country and culture) than newcomers' families and this may give more security to their children and a better attitude toward themselves, their family, and their native language. In turn, they try to keep their L1 as an asset.

Parents' language preference and length of U.S. residency of Grade 1 students (see Table 3) were correlated with English proficiency. But again, only U.S. residency was a significant predictor of English proficiency when home and school variables were considered together. These findings suggest that time is an important factor in learning a second language. The function of time in learning has been studied lately by Fredrick and Walberg (1980). They have found that time (instructional time, length of residence) may undermine age in some learning processes, language learning among them. No home or school variables proved significant predictor of English reading achievement for Grade 1 students, so no stepwise regression results are reported.

No school or home variables were significant predictors of Spanish proficiency at Grade 3, so no stepwise regression results for Grade 3 Spanish proficiency are reported in Table 5. Variables for student's language preference and a school accounted for 17% of the variance when predicting English proficiency. School 3 students had higher English proficiency than students in other schools when their language preference was accounted for. In the case of School 3, the teacher's background in Teaching of English as a Second Language may have made her emphasize the development of oral proficiency in English more than in the other schools involved in the project. The fact that this teacher was so eager to teach them English may have produced a positive attitude toward English in the students and they were eager to learn and use that language not only in the school but at

home (i.e. with their peers, to read, watch T.V. and listen to the radio). This finding has some implications for research and planning in bilingual education. Studies on the relation between teacher training and/or program design and L2 learning among language minorities in USA are very much needed to enhance program implementation.

Stepwise regression with English reading achievement as the dependent variable revealed that school differences were significant, but no other home variables were significant when school differences were accounted for. Inspection of Table 3 shows that students in School 5 had significantly lower reading achievement scores than children in other schools. Again, it is necessary to emphasize that the program design for that particular school emphasized learning in L1. By third grade, children were learning to read in English mainly through their English as a second language program component (which included oral language development and writing, as well). It may be that time spent on reading instruction accounted for the lower performance in reading in that school. Time is an important variable in learning as shown by Fredrick and Walberg (1980) and the effect of time of instruction in different areas within the bilingual program should be studied so as to facilitate program implementation and, as such, children's learning.

VI. Conclusion

This project has tried to study the relationship between home and student variables and language proficiency in L1, L2, and reading achievement with first and third grade students attending bilingual programs.

The subjects of the study were administered tests of language proficiency in Spanish and in English and an English reading test. Parents of the subjects filled out a questionnaire to rate family and student variables

as well as language proficiency and preference for themselves and their child and language use patterns at home. Only 58% of the questionnaires were returned and, of those, some were not completely answered. This reduced the size of the sample for the analysis considerably and limited the scope of the findings.

Results of the study show significant positive correlations between student's English proficiency and US residency and Spanish proficiency in first grade. This may reflect that children with a positive attitude toward their native language are able to keep and increase their proficiency in L1 while learning L2. English proficiency is positively related to number of years in the USA. It seems as if time more than age make a difference in a child learning L2. First graders showed a high correlation between L1 and L2 proficiency. These findings are supported by previous studies by Tucker (1975), Cziko (1976), and Cummins (1976) which seem to show that there is a strong relationship between L1 and L2 development. When regression analysis was done, only years of residency in U.S. accounted significantly for Spanish and English proficiency in Grade 1 and no significant predictor was found for reading achievement.

In the case of Grade 3, the data shows only School 5 is significant. Subjects in this school performed significantly worse in English reading than the other schools. This may be due to the design of that particular bilingual program where Spanish was the main language of instruction in the bilingual class. Again, there was a significant correlation between proficiency in L1 and L2 by grade 3. These findings are supported by previous research and they seem to support Cummins (1979) interdependence hypothesis in regard to language learning. Since the third grade L1-L2 correlation is less strong than for Grade 1, it seems that in grade 3 the two languages develop more independently of each other.

Regression analysis done with the third grade data showed no significant predictors of Spanish proficiency. Student language preference and school showed to be predictors of English proficiency. A difference in the teacher training background between the teacher in School 3 and the other teachers may explain these findings, as well as the positive attitudes of the children toward L2 as reflected by their language preference. In the case of reading achievement, only the school variable was a significant predictor of reading achievement. Children in School 5 did significantly worse in reading in English than children in other schools. This difference was explained in relation to the different bilingual program design used at that particular school where L1 instruction was emphasized.

In general, the results seem to show that length of residence in the United States is an important variable, in terms of language proficiency in L1 and L2. Recent work by Fredrick and Walberg (1980) have shown that time is a significant factor in learning. The effect of years of residency in the USA and of time of instruction in the learning of a second language are areas of study which should be included in a plan for research in bilingual education. Other areas for which our findings suggest that research is much needed are a.- the effect of teacher training (Bilingual Education, ESL, regular certification) in students learning of a second language, b.- the relationship between L1 and L2 development at different ages, and c.- the nature of transfer in language learning in a bilingual setting. Research-based information in these areas will facilitate program design and implementation and it will help provide better educational opportunities for culturally and linguistically different children.

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