1978

Effects of Bilingual Education on the Cognitive Characteristics of the Spanish Speaking Children in Chicago Public Schools

Ramon Luis Merlos
Loyola University Chicago

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EFFECTS OF BILINGUAL EDUCATION ON THE COGNITIVE CHARACTERISTICS OF THE SPANISH SPEAKING CHILDREN IN CHICAGO PUBLIC SCHOOLS

by

Ramon L. Merlos

A Dissertation Submitted to the Faculty of the Graduate School of Loyola University of Chicago in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

May

1978
EFFECTS OF BILINGUAL EDUCATION ON THE COGNITIVE CHARACTERISTICS OF THE SPANISH SPEAKING CHILDREN IN CHICAGO PUBLIC SCHOOLS

This study was designed to find and analyze the effects of bilingual education on the mathematics and reading of Spanish speaking children in Chicago Public Schools. Two schools were randomly selected from a list of sixty schools which had a bilingual program for fiscal year 1974-75. These schools had at least 50 percent Latin enrollment. The two schools had each a control and an experimental group with 386 students at the beginning of the study, and 360 students at the end of the experiment.

All the students in the study were pretested at the beginning of the school year using the Comprehensive Test of Basic Skills (CTBS) to test the students in Reading, and the Bilingual Test Battery (BTB) to test them in Mathematics. After the pretesting was completed, the experimental groups were taught bilingually (English and Spanish) for a period of eight months, while the control groups were taught monolingually (English) for the same period of time. At the end of the eight month period, all the students in the experiment were posttested using the same instruments to obtain the Reading and the Mathematics scores.
The difference between the means of pre- and posttest scores was designated as gain. These gains were subjected to One-Way Analysis of Variance to determine whether nonrandom variation existed in any of the comparisons. Those comparisons which showed a variation which was significant at a probability of less than 5 percent were further analyzed by use of a t-test to enable specific comparisons of control and experimental groups to be made so that the source of the variation could be pinpointed.

The results of the study were not conclusive, and therefore, no generalization can be made. School one, which was in its second year of operation of a bilingual program, showed no significant variation in Reading, but showed a significant difference between the control and the experimental groups in Mathematics for the first grade. In this instance, the experimental group had significantly higher scores than the control. However, no significant differences were noted for the second, third, and fourth grades.

School two, in its first year of operation of a bilingual program, presented two significant differences between the control and the experimental groups in Reading for the third and fourth grades. In addition, school two presented significant gains between the control and the
experimental groups in Mathematics for the second, third and fourth grades. In all these instances the experimental groups had significantly higher scores than the control.

The study showed that, in general, the effects of bilingual education for the two schools in question were positive or neutral. It showed no negative effect in any of the cases. It is recommended that more studies be conducted with more schools and with higher grade levels, as well as more investigations with schools that have had a bilingual program in operation for longer periods of time.
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Thanks also to the Chicago Board of Education and especially to Manuel Ortiz, who helped me in the entire testing process and in the tedious work of data collecting.

In all, and above all, thanks to God and glory to Him, always both now and ever and unto ages of ages, Amen.
VITA

The author, Ramon L. Merlos, is the son of Arnulfo Merlos and Salustia Barajas de Merlos. He was born May 28, 1941, in Aporo, Michoacan, Mexico.

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From 1969 to 1970, he was granted a fellowship from the Corporation for Public Broadcasting. In June, 1970, he was awarded the Master of Arts degree in Communications from Michigan State University. In January, 1971, he was ordained into the Priesthood in the Eastern Orthodox Church at St. Nicholas Orthodox Cathedral, in New York City.

In August, 1970, he was selected as a United States Office of Education Fellow in Washington, D.C.

He has published, co-authoring with Dr. Baldwin and Mr. Meuche, The Lansing Mexican-American Community: A Study of General Problems and Radio Programming Preferences.
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CHAPTER I

INTRODUCTION

Statement of the Problem

The literature on how bilingual education affects the learning of children is controversial. The results of teaching and learning in two languages have been seen as positive, negative, or neutral by various investigators, from the 1920's to the late 1960's. However, many current educators and scholars contend that bilingual education should be tried as an alternative to present monolingual systems, especially within the large Spanish-speaking subculture present in the United States today. 1

In the past, more than twenty states had laws requiring all teaching in public schools to be in English. In seven states, certification could be revoked or criminal penalties could be brought against a teacher if he did not teach in English. By 1968, however, twenty-one states had bilingual education programs concerned with the Spanish, Portuguese, or French languages. Of the American Indian children, 80,000 speaking Navajo, Pomo, Cherokee, and other Indian languages were enrolled in bilingual federal,

mission, and public schools. All states are now involved, one way or another, in bilingual education; some have passed laws requiring bilingual education (e.g., Arizona, Illinois, Massachusetts, New Mexico); some other states are in the process of passing such laws. In January 1974, in a unanimous decision, the United States Supreme Court ruled that non-English-speaking students have a legal right to special bilingual instruction to help them attain proficiency in English. Justice William Douglas, writing the opinion stated:

Under these state-imposed standards there is no equality of treatment merely by providing students with the same facilities, textbooks, teachers, and curriculum; for students who do not understand English are effectively foreclosed from any meaningful education.

Major influences in the growth of bilingual education and the commitment on the part of the federal government were the passage of the Bilingual Education Act of 1967, which became Title VII of the Elementary and Secondary Education Act of 1965, and the United States Supreme Court decision of 1974.


Thus there is a current burgeoning of bilingual programs throughout the country and yet the controversy continues over the effects of such educational methods. Therefore, this study attempts to examine the effects of specific bilingual programs presently in operation in the Chicago Public School System on the reading and mathematical abilities of Spanish-speaking pupils.

**Definition of Terms 4**

**Anglo culture**

Short for White Anglo Saxon Protestant, Anglo culture refers both to origin or stock of certain groups in the United States as well as to the prevailing ethic and "culture" of the nation. The latter are identified as such because they appear to have their foundations in their heritage and history of that group of immigrants who came originally from northern European shores. Specifically, it refers, in this study, to all white persons who are not Mexican-Americans or members of other Spanish-speaking groups. They are most often monolingual and monocultural, especially in the Western and Southwestern United States. The term has been broadened recently to include all non-Spanish-speaking whites, even those speaking other languages and of other ethnic sub-cultures.

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4Board of Education, *op.cit.* All of the definitions of terms used in this study are derived from this source.
Bicultural

The term bicultural refers to the person who has the understanding and appreciation of two cultures and the ability to function easily in either one. Most specifically, in this study, it refers to the person who has the understanding and appreciation of the Spanish and English languages, and the Mexican-American or Puerto Rican heritage alongside the Anglo culture.

Bilingual

For the purpose of this study, the term bilingual applies to all persons who, because of environment or family background, speak and understand, however inarticulately, two languages. The term also includes those persons who are culturally affected by biracial circumstances. The Mexican-Americans and the Puerto Ricans are of primary concern "bilinguals" in this study. It is recognized that they are often found in community clusters where they generally speak only Spanish. In this paper, bilingualism and bilingual education will be considered synonymous.

Bilingual education

This term refers to the teaching of two languages and using them as media of instruction in any or all parts of the curriculum, except the languages themselves. Since language is inextricably bound to culture, the study of both cultures is integral to bilingual education.
Culture

In the context of this study, culture has a very definite connotation. It refers to the history, reality, values, identity, actions, or social dynamics of the Mexican-American, Puerto Rican, Cuban, and South American. It is not employed to denote a group of people nor a complete and discrete system of human behavior.

First language

The speaker's first language is referred to as native language, home language, vernacular, or mother tongue.

Mexican-American

The people of Spanish or Mexican origin, in the United States, are commonly referred to as Mexican-American, Latin-American, or in certain areas, New Mexico for example, they prefer to be identified as Spanish-Americans. More recent authors tend to employ, rather exclusively, the term "Mexican-American," and this term is used in this study and will be applied to persons who were born in Mexico and now reside in the United States, or whose parents or more remote ancestors immigrated to the United States from Mexico. It also refers to persons who trace their lineage to Hispanic or Indo-Hispanic forbears who resided within Spanish or Mexican territory that is now part of the Southwestern United States.
Monocultural

As used in this study, monocultural refers to the person who has the ability of understanding and appreciating his culture and is able to function easily in it.

Monolingual

In this study, monolingual refers to the person who has the ability to understand and to communicate in only one language. Monolingual and monoglot are synonymous in this study.

Puertorriqueño or Puerto Rican

These terms apply to persons born in Puerto Rico, or in the United States from Puerto Rican parents. Since it is sometimes important to categorize on the basis of location, the terms "mainland" or "island" are often used as modifiers.

Second language

The speaker's second language, or the language to be mastered, is referred to as the target language.

Models of Bilingual Education

A systematic exploration of the considerations that enter into the selection of bilingual models has been made by William F. Mackey, based on information gathered in the
files of the International Center for Research in Bilingualism. Mackey proposed four levels of dimensions of varying bilingual educational settings: (1) the learner in the home, (2) the curriculum of the school, (3) the community or area in the nation, and (4) national language patterns. He stressed the point that language is the basic component in each of these dimensions; that language "is itself a variable," and that "each language appears in each pattern at a certain degree of intensity."

A useful illustration of this concept of intensity appears in Valencia's study of three Mexican-American communities of the Southwest. He compared the intensity and usage of the native language with English among children in Laredo, Texas; Pecos, New Mexico; and Albuquerque, New Mexico. He observed, for example, that the child living in the border town of Laredo is exposed to and uses a great deal more Spanish than the child living in Albuquerque. Valencia concurred with Mackey, that the language competence of the child can be examined in the context of community patterns in language use, and that the interaction of these and other variables be considered in the planning of bilingual schools.


Supplementary model

In many school systems throughout the country, limited attempts at using two languages as instructional media are in effect. These programs are supplementary in nature. Some are in places with scant resources for bilingual education, for instance, Pecos, New Mexico. Others are rather aimed at a few non-English-speaking children in a primarily "mainstream" community, such as the one in Englewood, New Jersey.

The supplementary program in Pecos, a community in northern New Mexico, is a particularly well-established one. All the children in the Pecos school under consideration, including the small number of native speakers of English, receive half an hour of Spanish instruction every day. In spite of limitations in staffing and time devoted to instruction in the native language, the Pecos program has been a pioneer in bilingual education in New Mexico. Since its inception in 1965, with Ford Foundation funds, the program has served as a demonstration center. More recent and ambitious programs in the nation are based upon the success of this program. 7

In Englewood, New Jersey, the introduction of a non-graded, multi-educational system offered an opportunity for

educational innovation. Teachers work with children in small groups; bilingual tutors work with groups as small as two or three children. Their purpose is to achieve a third grade proficiency in Spanish among the Puerto Rican children before moving them into reading in English. 

In the two programs described above, instruction in the native language is limited to a small portion of the school day.

**Transitional models**

The long-range goals of bilingual education are two-fold, according to Mackey. The curriculum can be directed toward the language of the wider culture, thus promoting acculturation; or the curriculum can be directed toward the regional, national, or neo-national culture, thus promoting irredentism.

For many bilingual programs, the use of the mother tongue serves only as a bridge to the national language. Mackey described such a transitional program as the Transfer (T) type: He said that:

The transfer pattern has been used to convert from one medium to another... In schools of this type, the transfer may be gradual or abrupt, regular or

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irregular, the degree of regularity and gradualness being available as to distinguish one school from another.10

The transitional model is also called the one way model in which there is one group learning two languages, the mother tongue and the second language. Assuming that Spanish and English are the two languages, Figure 1 shows how this looks.

In Figure 2, a model is described in which students do not have to wait until the afternoon session or until the following day in order to hear the lesson in the mother tongue. This model has many combinations, including the non-blended method in which Spanish will be spoken the whole morning and English the whole afternoon, or vice-versa; or Spanish the whole day and English the following day, or vice-versa; or Spanish for two days and English the following two days, or vice-versa.

There is also the blended method which uses bilingual teachers—in which the two languages are continuously interspersed as the instructor explains a lesson. The models used in the Chicago bilingual programs, which were examined in this study, were of the transitional type discussed on page 9. The teachers were bilingual and both English and Spanish were used intermittently during class instruction for the eight months

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10 Ibid.
Fig. 1.—Instruction equally divided in Spanish and English.

Fig. 2.—Instruction with bilingual teachers or with monolingual teachers in a team situation.
of the experimental period. Specifically, the blended language model seen in Figure 2, page 11, was used in the programs under study.

Where the program is offered predominantly in English, as shown in Step One, Figure 3, English is used in the teaching of all the subjects except in the teaching of the Spanish language, in which case Spanish is used. In Step Two, shown in Figure 4, English and Spanish are used in the teaching of some subjects, equally distributed, except in the English classes, in which both languages are used interchangeably. Step Three, shown in Figure 5, uses Spanish in the teaching of all subjects except in the teaching of the English language, in which English is used.

Two-way model

In this model there are two different groups, each one of them learning in its own and the other's language. In this particular case, the Spanish-speaking group will be learning in Spanish, while learning English; and the English-speaking group will be learning in English, while learning Spanish.

Mackey, in his typology of bilingual schools, identified two major variants that are categorized as two-way schools: the Dual Medium Differential Maintenance (DDM) and the Dual Medium Equal Maintenance (DEM). Mackey was very exhaustive in his models of bilingual education and described the DDM model as follows:
<table>
<thead>
<tr>
<th>Math</th>
<th>Soc. St.</th>
<th>Spanish</th>
<th>Science</th>
<th>Lang-Arts</th>
</tr>
</thead>
<tbody>
<tr>
<td>English is used</td>
<td>English is used</td>
<td>Spanish is used</td>
<td>English is used</td>
<td>English is used</td>
</tr>
</tbody>
</table>

Fig. 3.—Step One: The program is offered predominantly in English.

<table>
<thead>
<tr>
<th>Math</th>
<th>Soc. St.</th>
<th>Spanish</th>
<th>Science</th>
<th>Lang-Arts</th>
</tr>
</thead>
<tbody>
<tr>
<td>English is used</td>
<td>Spanish is used</td>
<td>Spanish is used and target language</td>
<td>English is used</td>
<td>English is used</td>
</tr>
</tbody>
</table>

Fig. 4.—Step Two: In this stage both Spanish and English are used equally, but separately.
<table>
<thead>
<tr>
<th>Math</th>
<th>Soc. St.</th>
<th>Spanish</th>
<th>Science</th>
<th>Lang-Arts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish is used</td>
<td>Spanish is used</td>
<td>English is used</td>
<td>Spanish is used</td>
<td>Spanish is used</td>
</tr>
</tbody>
</table>

Fig. 5.--Step Three: The program is offered predominantly in Spanish.
In maintaining two languages for different purposes, the difference may be established by subject matter, according to the likely contribution of each culture. Often the culture based subjects like art, history, literature, and geography are in the dominant home language.  

Fishman argued in favor of the DDM model as the accurate expression of the actual uses of the native and national languages in bilingual communities. However, those interested in the development of balanced bilinguals have argued in favor of a dual system characterized by equal treatment of the two languages. Mackey described this system, the DEM, in the following manner:

In some schools . . . it has been necessary . . . not to distinguish between languages and to give equal chance to both languages in both domains. This is done by alternating on the time scale—day, week, month, or year from one language to the others.  

The best known example of a two-way bilingual school is the Coral Way Elementary School in Miami, Florida. Two important long-range conditions of bilingual education are exemplified in such a program: (1) equal time and treatment are given to two languages (Spanish and English), and (2)

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monolingual English-speaking children are integrated with Cuban immigrants into this bilingual system. The Miami experiment has been highly successful locally and nationally. Figures 6 and 7 show how these two models look.

In conclusion, educators must be aware of the fact that although theoretical concerns enter into the choice of a model for bilingual education, most bilingual schools develop their curriculum as a function of practical considerations. Basic research, the preparation of materials, and the training of teachers lag severely behind the needs of existing and projected bilingual programs. Consequently, administrators and parent advisory committees are often forced to choose programmatic models that fall short of the long-range goal of developing balanced bilinguals.14

Fig. 6.—Dual-Medium Differential Maintenance.

Fig. 7.—Dual Medium Equal Maintenance.

Note: Shaded square indicates Language Y, plain square indicates Language X. (X and Y are two different languages.)
CHAPTER II

REVIEW OF RELATED LITERATURE

Historical Background of Bilingual Education in the United States

The year 1776 has been a milestone of American History; the 200th anniversary has been celebrated just recently. However, the Spanish conquistadors came to America long before 1776. Hernán Cortez conquered Mexico City in 1521, and after this historical date, many Spanish conquistadors came up to California, Texas, Oklahoma, and the whole Southwest of what is now the United States of America. Famous cities like Los Angeles, San Francisco, El Paso, San Antonio, Santa Fe, etc., were founded by the Spanish missionaries and adventurers long before 1776. On that date, however, a new nation took shape, which during its growth westward began absorbing peoples of many immigrant nations into the "Anglo culture." This process of amalgamation is identified as the "melting pot" wherein all cultures melt into one, the people abandoning their own culture and assimilating themselves into this new one. In his book, U.S.: A Nation of Immigrants, John F. Kennedy made the most impressive description of the make-up and historical development of this nation, with no direct or
indirect reference to Spanish and Black Americans.¹

The greater part of North America, north of the Rio Grande, came under English common law and the English language was used. A great immigration from Europe took place between 1817 and 1860, at a rate of almost 100,000 people a year. By 1860, the population of the United States had grown from 17,000,000 to 31,000,000. These immigrants settled mainly in the north and in the west, where land and jobs could be available for them. As they moved into the country, their languages moved with them and bilingual schools were slowly established in many localities.

A few schools, some church groups, and some cultural clubs did not completely forsake their mother tongue and their own history. Some bilingual schools came into existence as early as 1839. Bilingual education, indeed, is nothing new to the United States. Before World War I, in the period from 1839 to 1880, German was the only non-English tongue admitted in most schools: French was accepted in Louisiana, and Spanish in New Mexico.²


A little later, from 1880 to 1917, more bilingual public schools came into existence. German-English schools were established in Cincinnati, Indianapolis, Baltimore, New Ulm, Minnesota, and many rural places in the Dakotas, Illinois, and Missouri, as part of the public school system. The German language was taught also as a subject in many other public schools, even though it was not used as a medium of instruction. Other languages were also taught as a second language, but not used as a medium of instruction. To this category belong Norwegian, Czech, Italian, Polish, Russian, and Dutch.

More recently, between the two wars, Franco-American schools were founded in New England; Chinese and Japanese schools were functioning in Hawaii and along the west coast. The European immigrants, however, were gradually assimilated into the Anglo-Saxon culture in most areas of the country and began to abandon their bilingual schools. The second and third generations no longer wanted to learn the languages of their forefathers. During the second World War, in which patriotism to the predominant culture was emphasized, and during the post-war era, very little value was given to bilingual education. However, there has been a recent awakening and renewed interest in bilingual education during the 1960's and 70's.

Ibid.
Dorothy D. Duohon has clearly set forth the philosophical reasons for the tremendous outpouring and powerful movement in favor of bilingualism in the following manner:

Strong forces now at work in our country are bringing about a change from a state of unawareness to a realization of what is at stake in the education of the potentially bilingual child, whatever his native language may be. We can no longer afford to ignore the resources latent in this important individual and his counterparts, nor refuse to acknowledge that among the consequences of continuing oversight are social and economic problems that seem to stem from drop-outs or inadequate education. On the other hand, the potential gains of our entire country from a well-educated, well-adjusted group of people, able to function effectively in two languages and cultures, are immeasurable.4

A. Bruce Gaarder, one writer on bilingual education, expressed himself as follows:

I cannot but suppose that you are all well versed and highly interested in this matter of giving a better kind of education to children who are necessarily bilingual. That is our primary interest here. Yet I hope that we will go one step beyond that from the very first and say that we are also interested in developing bilingualism which did not exist before and which does not necessarily have to exist. To make plain my meaning: in Puerto Rico bilingualism is not necessary at all, it is cultivated. But surely in Texas it is

inevitable. You are seeking it in the one case, and you cannot avoid it in the other.  

The renewed interest and necessity for bilingual education has thus led to a need for precise definitions. Indeed, the term "bilingual education" itself is often misunderstood. Gaarder stated:

A bilingual school is a school which uses, concurrently, two languages as mediums of instruction in any portion of the curriculum except the languages themselves. Thus, for example, arithmetic in English and history in Irish, or all subjects (except Irish and English) in both tongues would constitute bilingual schooling. English through English and all other subjects in Irish would not. The teaching of a vernacular solely as a bridge to another, the official language, is not bilingual education in the sense of this paper, nor is ordinary foreign language teaching.

Mildred Boyer, in attempting to determine an operational definition, tried to define the term "bilingual program" as commonly used in the nation, and has concluded that there are many programs that have the label "bilingual" but that in reality are misleading. She called

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attention to the fact that the children participating in such programs are usually bilinguals, not the programs themselves. The guidelines, however, of the Title VII, Bilingual Education Act of 1968, eliminate this confusion thus:

Bilingual education is instruction in two languages and the use of those two languages as mediums of instruction for any part of, or all of the school curriculum. Study of the history and culture associated with a student's mother tongue is considered an integral part of bilingual education.

Bilingual education is most importantly a method for teaching another language or preserving a culture and language for those who already have it. Indeed, it is a means of achieving human understanding.

Senator Yarborough said, in his address to the Joint Convention of the Modern Language Association and the American Council on the Teaching of Foreign Languages in New York City, Saturday, December 28, 1968:

... and I think that through your efforts to understand and improve our knowledge of and ability to use languages you are preforming the most fundamental and important task of civilizing man.

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Language is at best a crude and imprecise tool to reflect and express the infinitely subtle ramifications of our thoughts. But in our increased understanding of the semantic imprecision of language lies our conviction to understand: nations must learn to understand nations; peoples must learn to understand peoples; and man must learn to understand his fellow man. It is through language—perhaps through language alone—that this understanding can be achieved.9

Such intercultural understanding is particularly crucial today when over 5 percent of the nation is of Spanish-speaking heritage, and our country exists in a hemisphere where Spanish is the predominant language.

H. T. Manuel has expressed this relationship between English and Spanish and this has led him to suggest that more emphasis should be given to the learning of English and Spanish as a second language in the Southwest, or for that matter, in any place where the two languages exist in the United States. These were his thoughts:

The main burden of learning a second language obviously falls on the Spanish-speaking child, not because it is imposed by some authority, but because of the situation into which events of the past have brought us. English is the native language of the great majority of our people, the predominant language of government, business, industry, and news media. English for the Spanish-speaking child is a necessity if he is to become a full participant in the activities of the community, the state, and the nation.

Although Spanish for the English-speaking child is less urgent, his learning Spanish would greatly improve communication and understanding among our people. Spanish deserves a special priority in communities in which there is a considerable proportion of Spanish-speaking residents. In teaching Spanish for its local value, the early years are favorable to language learning and because better communication improves the relations of children of different background.10

For a particular child, this idea of intercultural understanding comes down to an ability to function in his society without losing his cultural identity. Pauline Rojas has expressed this concept as follows:

The overall objective in the education of the bilingual child is his integration into the mainstream of American life. This does not mean that the bilingual child must give up his own language and culture, but rather that he must be so educated that he will be able to operate in English when the situation demands English, and operate in his own language when the situation demands the use of his own language. It is the obligation of the school to make him literate in both languages. For the bilingual child to be able to operate effectively in the English-speaking world, he must acquire the language to the degree necessary for whatever role his abilities enable him to play. In addition, the school must give him a workable knowledge of the behavior patterns and value systems of the dominant group.11


In a moving Mexican-American magazine article, Antonio Gomez told of his feelings as a Mexican-American student:

School is where it starts, and school can be a frightful experience for most Chicano children. It was for me. The subtle prejudice and the not so subtle arrogance of Anglos came at me at a very early age, although it took many years to realize and comprehend what took place. The SPEAK ENGLISH signs in every hall and doorway, and the unmitigated efforts of the Anglo teachers to eradicate the Spanish language, coupled with their demands for behavioral changes, clearly pointed out to me that I was not accepted. . . . The association between being different and being inferior was quite difficult to resist, and it tortured me for many years. 12

However, the civil rights movement and changes that came about in legislation during that period have somehow taken us in a different direction. Gaarder said:

. . . there is underway a terrifying movement toward the homogenization of all peoples. . . . At the same time, there is an equally strong movement toward what I call world-wide egalitarianism. This double tendency toward equalizing us all has two strange and antithetical or complementary manifestations. One is toward homogenization, toward everybody being alike. The other is in the opposite direction. Strangely enough, it is toward preservation, placation, and assurance given to every group that it is all right already, that its way of being is uniquely valuable in human terms. 13

12 Antonio Gomez, "What Am I About?" Con Sofos I (Fall, 1968), pp. 8-9.

13 Gaarder, Addresses and reports, op. cit.
Studies Regarding the Effects of Bilingual Education

There has been a great deal of speculation about the effects of bilingualism, especially in the past decade. Opinions conflict regarding its intellectual and educational advantages and disadvantages. The situation in Wales, in which both Welsh and English have been taught in the schools for many years, has prompted many diverse comments by educators. For example Owen Richards, referring to English-speaking children in Wales, said:

Even where the child discontinues the study of Welsh before leaving school or soon afterwards, it is the experience of teachers that the learning of it has had an excellent effect not only on the development of intelligence, but on the acquisition of English. We do not regard the bilingualism of our country as a disadvantage in any way. We look upon it as an advantage.\footnote{Report of the Imperial Education Conference, (London, 1911), p. 256.}

Leathes also regarded bilingualism positively:

I think that bilinguals, like the Welsh, whose education is carried on in two languages, must get more from their elementary schools than the scholars of a country like England, where only one language is used in school.\footnote{S. Leathes, What is Education? (London: G. Bell and Sons, 1913), p. 81.}

Further in the same volume he stated: "Having learned two languages he is probably the better fitted to learn others."\footnote{Tbid., p. 95.}
Williams, referring particularly to the situation in Wales, remarked toward the end of his report dealing with the bilingual schools in Belgium and Alsace-Lorraine:

The conscience of educators is sufficiently enlightened for them to realize . . . that the learning of Welsh by English children within the borders of Wales in the habit forming period between six and twelve years of age, is an intellectual advantage.\textsuperscript{17}

Others, however, do not think that bilingualism is an advantage. Dawes, after a visit in 1899 to the schools of Belgium, stated, in his report:

The Director told me that the Walloon Schools do better in the concourse general (annual competitive examination for all the secondary schools) than the Flemish, and he attributed this to the bilingual character of the Flemish schools. The pupils are somewhat confused with the two languages, and there is a great mental effort in changing from one language to another.\textsuperscript{18}

But in the same volume he struck a more positive note when he said: "There is no doubt, however, that as far as the learning of modern language is concerned, the Flemings are far advanced over the Walloons."\textsuperscript{19}

Ghibu quoted Ziegler as saying: "There is nothing more unfortunate than a child or a race who from the beginning learns to speak in two languages. To speak two

\begin{quote}
\textsuperscript{17}J. J. Williams, Mother Tongue and Other Tongue (Bangor: Jarvis and Foster, 1915), p. 104.
\textsuperscript{19}Ibid., p. 50.
\end{quote}
languages at once means being at home in neither."\(^{20}\)

L. Graf V. Pfeil, again quoted by Ghibu, stated: "A great danger to the development in all directions of thought powers is brought about when children are taught a new language before they are fully certain of their mother tongue."\(^{21}\)

Blocher gave a long list of advantages and disadvantages attributed to bilingualism, and the disadvantages seem to be greater in number.\(^{22}\)

These early authors, in general, were merely expressing opinions based on undocumented observation or experience. In an effort to evaluate the effects of bilingual education, the following studies have been reviewed.

**Studies Supporting the Detrimental Effects of Bilingualism**

The studies in this category may be arbitrarily divided into two subgroups. The first of these consists of those who found that monolingual groups performed better than the bilingual on both verbal and nonverbal intelligence tests. The second consists of those who

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\(^{21}\) Ibid., p. 40.

found the bilinguals superior to monolinguals in performance tests and inferior in the verbal tests. This is indicated as follows.

In the 1920's, when intelligence tests first became popular and the American attitude toward foreign groups was a great deal more hostile than it is today, the lower scores of bilingual children were consistently interpreted as evidence of either intellectual inferiority, or the harmful effects of bilingualism.

After testing 1,400 children in Wales, Saer reported a statistically significant inferiority of rural bilingual children when compared with rural monolingual children on the Stanford-Binet scale. This inferiority became consistently greater in degree with each year from seven to eleven years of age. Saer attempted to explain this trend in terms of the "mental confusion" encountered by the bilingual children. When urban children only were compared, he found no significant difference between monolinguals and bilinguals. It should be noted that socioeconomic class was not controlled in this research and that a Welsh translation of the Stanford-Binet test was used.

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Several studies (Graham, 1925; Wang, 1925; Mead, 1927 and Rigg, 1928)\textsuperscript{24} have found that monolingual American groups performed better than children with various foreign backgrounds on intelligence tests. All these studies lacked controls for age and socioeconomic class, and in some bilingualism was not adequately measured. Certain studies (Colvin and Allen, 1923; Garbo, 1931; and Ladd, 1933)\textsuperscript{25} of Italian-English bilinguals found consistently substandard performances on all English to English speaking monoglots, but also inferior in Italian to Italian-speaking monoglots. What Garbo and other early research people often found, was that their subjects were not true bilinguals, but they were apparently looking for proof that bilingualism produces intellectual inferiority and assumed that they had found it.


Garretson (1928), through testing Mexican-American children, concluded that monolinguals surpass bilinguals in intelligence. Jamieson and Sandiford (1928), in a study of Canadian Indians, found this apparent superiority in monoglots in three tests out of four.

Pinter (1932) administered the Pinter Language and Nonlanguage tests to monolingual and bilingual groups in each of three schools in New York City. The results obtained are inconclusive in the sense that in one school, monolinguals were superior on both tests, while in another they were inferior, and in the third there was no difference between the groups. There was no control for socioeconomic class in this study and bilingualism was determined by looking at the child's name.

A rather well-controlled study by Seidl (1937) found that monolinguals were superior to bilinguals on all verbal tests, but bilinguals were superior to monolinguals


on performance measures. The 1916 Stanford-Binet scale, and the Arthur Point Scale of Performance, were the tests used. The two groups of subjects, whose linguality was determined by a questionnaire, were matched on sex and age. However, the mean occupational level of the monolinguals' parents was in the laboring class, while the bilinguals' parents was in the semiskilled labor class. This difference in social class may partly account for the results. Seidl, however, concluded that the language handicap of the bilinguals interfered with their verbal IQ scores.

Darcy (1946)\textsuperscript{30} reported on research carried out with 212 American preschool children of Italian parentage. In this study, the variables were quite well controlled. The subjects were classified as bilingual or monolingual by a rating scale; the groups were matched for age, sex, and social class. The results showed higher scores on the part of the monolingual children.

The most important study of detrimental effects was the one by Jones and Steward (1951).\textsuperscript{31} After surveying the studies made prior to 1951 in Wales, they concluded that bilingual and monolingual groups differed little in nonverbal intelligence tests and that monolingual groups were

\textsuperscript{30}Natalie Darcy, "The Effect of Bilingualism upon the Measurement of the Intelligence of Children of Preschool Age," \textit{Journal of Educational Psychology}, 13 (1946), 21-44.

usually superior to bilingual groups in verbal tests. The
design of their experiment was based upon these conclusions.
A verbal test and a nonverbal test were given to monolingual
and bilingual groups in rural districts. The children were
between ten to six and eleven to six years of age. The
monolinguals were found to score significantly higher on
both types of tests. The two groups were equated statis-
tically, by the analysis of covariance, on nonverbal IQ and
the differences between them on verbal IQ were then noted.
"It was, therefore, concluded that the bilingual children
were significantly inferior to the monolingual children, even
after full allowance has been made for initial difference in
the nonverbal intelligence tests." 32 It could be argued that
the bilinguals may have encountered greater difficulties
because for them the tests were translated into Welsh, their
vernacular, but not standardized in the Welsh culture.
This may have lowered their scores on the verbal test.
However, this would not account for the original difference
in nonverbal IQ. After further investigations, Jones later
conceded that the significant difference in nonverbal test
scores observed in all his studies may have arisen from
occupational rather than linguistic variations between the
groups.

32 Ibid., p. 4.
An important technique for objectively measuring bilingualism was introduced by Johnson (1953).33 His Time Test, based on reaction time derived from the earlier work of Saer (1931), was a measure of linguistic balance obtained by dividing the number of words produced in English in five minutes, by the number of words produced in Spanish in five minutes. The subjects for his experiment were thirty Spanish–English bilingual boys in the United States between the ages of nine and twelve years. The Goodenough IQ for these children was about average for the total population, but the Otis IQ was considerably below average. Johnson's Test of Bilingualism was found to correlate negatively with the Otis (a verbal test) and positively with the Goodenough Draw-a-Man-Test (a performance test). The more bilingual the subjects were the better they did on a performance test and the poorer on a verbal test. No conclusions were drawn by the author as to the causes of such a result.

Further weight was added to the burden of evidence against the advantage of bilingualism, in a study by Keston and Jimenez (1954)34 who tested fifty bilingual boys and


girls in New Mexico. These Spanish-English bilinguals were administered the 1937 revision of the Stanford-Binet test also, Form M in English and Form L in Spanish. The Spanish translation of Form L had been made by Professor Cebrian of the National Institute of Psychotechniques in Madrid. The mean IQ obtained with Form M (English) was 86.0, with Form L (Spanish) it was 71.8. From these results the authors concluded that the bilinguals' knowledge of Spanish was even poorer than their knowledge of English.

O'Doherty (1958) expressed his conviction to the effect that the substantiation of nonverbal deficiency on the part of bilinguals was not necessary to discredit bilingualism, since it is clear that the bilingual child is consistently behind the monoglot in academic achievement, and that his handicap factor can be estimated from the fact that by the end of adolescence his mental age will be up to one and one-half years inferior to his monoglot brother's development. O'Doherty stated that:

... if this is due to the verbal factor it is not really any help to say that the child's innate intelligence is the same as his monoglot brother's. For if the verbal factor impairs his performance in a test, it will impair his

performance in life, where almost everything he does will depend on language.36

Moreover, Levinson (1959)37 tested American-born Jewish preschool monolingual and bilingual children of similar socioeconomic level and found them to perform alike on the Goodenough test and most subscales of the WISC. However, on the Stanford-Binet and the WISC Arithmetic, Vocabulary, and Picture Arrangement subtests, the monolinguals scored higher.

Rather less scientifically, the early European investigators of bilingualism reported in the study by Weinreich (1966), 38 showed varied, but extremely negative, attitudes toward bilingualism. Epstein and Blocher were convinced, it appeared, that bilingualism causes serious emotional difficulties, while Reis tried to ascribe the allegedly second-rate character of the Luxembourger to his bi- or trilingualism. Weinreich quoted Reis as asserting the following:

The temperament of the Luxembourger is rather phlegmatic. ... We have none of the German sentimentalism, and even less of French

36 Ibid., p. 283.
vivacity. . . . Our bilingual eclecticism . . . prevents us from consolidating our conception of the world and from becoming strong personalities. . . . We are condemned to having our wings cut by skepticism and the dread of responsibilities.39

Thomasine Hughes Taylor (1969)40 examined the effects of continuous oral-aural language teaching techniques used with low socioeconomic urban Spanish-speaking children. Six treatment groups were considered: (1) Language Cognition English (LCE) which provided intensive oral-aural English instruction using specially designed science-based materials for one hour a day for five years (N=32); (2) Language Cognition English (LCE) which received the same treatment for one hour a day for four years (N=27); (3) Language Cognition Spanish (LCS) which provided intensive oral-aural Spanish instruction using the same science based materials for one hour a day for five years (N=26); (4) Language Cognition Spanish (LCS) which received the same treatment in Spanish for four years (N=20); (5) Fifth grade control students receiving English instruction according to district curriculum policy; and (6) Fourth grade control students receiving English instruction according

39 Ibid.

to district curriculum policy.

An analysis of variance was used to determine differences between the treatment groups. At the fifth grade level significant differences existed between groups on phonology, fluency and total language (P < .05). Fifth grade mean scores favored the Spanish group on all subtests except intonation. At fourth grade, differences were not statistically significant on any language subtest (English and Spanish); however, mean scores favored the Spanish group on phonology, fluency, and total scores. These findings might suggest that some instruction in Spanish is beneficial to English language proficiency.

Inez R. Ramirez (1973)\(^{41}\) tried to determine if there were significant differences in mean scores on oral English proficiency, self-concept, and scholastic achievement between kindergarten-age Mexican-American students in an experimental and in a control group. The experimental group received English as a second language instruction using the *Teaching English Early Program* and the control group received traditional English instruction. The study was conducted over a period of nine months. At the beginning of the study,

in October of 1972, both the experimental and the control groups were pretested with the Michigan Oral Language Productive Test, the Primary Self-Concept Scale, and the Test of Basic Experiences. At the conclusion of the study, in May of 1973, the Michigan Oral Language Productive Test, the Primary Self-Concept Scale, and the Test of Basic Experiences were administered to both groups with a small sample of sixty students.

In the areas of oral English proficiency, self-concept, and scholastic achievement, there were significant differences between the experimental and control groups in favor of the experimental group. The study also revealed that there were significant correlations between the variables of oral English proficiency and scholastic achievement and between self-concept and scholastic achievement of the experimental group. The study further revealed that no significant relationship existed for the experimental group between the variables of oral English proficiency and self-concept.

Studies Supporting the Favorable Effects of Bilingualism

A number of studies have been reported on the development of bilingualism in specific children. The classical
investigation in bilingualism is that of Jules Ronjat. In 1913, Dr. Ronjat reported carefully, and in great detail, on the linguistic development of his bilingual son, Louis. From the time of Louis' birth, his father and mother spoke invariably in French and in German, respectively, in the presence of the child, or in speaking to him later on. This method—une personne, une langue—was followed because of a suggestion made by Professor Grammont, that prior to his ability to speak, an emmagasinement, or incubation with regard to vocabulary and pronunciation, takes place in a child. The method was continued throughout. The relatives on the father's side, and certain domestics, always spoke to Louis in French, while the relatives on the mother's side, and certain other domestics, always spoke in German. The attempt was made to keep the two languages on as equal a level as possible. From the very start, the child pronounced the two languages as well as a monoglot child in either language. There were very few cases of interchange in vocabulary or syntax from one language to the other, and these did not affect the general correctness of either language. At the end of the third year, Louis was conscious of his bilingualism and anxious to show off his ability as an interpreter. The bilingualism of Louis did not seem to

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have any influence on the modality of the child's Krahen, or on the time of his first imitations. According to Ronjat, Louis' accent, pronunciation, knowledge of the two languages, and his intelligence were not retarded in any way to be attributed to bilingualism.

In the same monograph, Ronjat mentioned the case of another bilingual child--Addi, whose parents did not use the method of une personne, une langue, but used the two languages, French and German, interchangeably, although at the beginning the German language was used more. Very early the child would be asked names of objects and events in Allemand, auf Französisch. The child answered ordinarily in the language in which the question was put. The results were similar to those observed in the case of Louis. Addi's pronunciation and mental development were not different from that of the monoglot of the same age and cultural environment. There was only one difference: The consciousness of bilingualism appeared with Addi at about the age of two years and a half. This was earlier than in the case of Louis.

Pavlovitch (1920)\textsuperscript{43} reported a similar experiment on his son, Douchan. At the time of Douchan's birth and during his earlier years, his parents, both Serbian, lived in Paris.

Douchan learned both Serbian and French, the latter from his fourteenth month. The acquisition of the phonetic elements in both languages was, as in the case of Louis, that of the native child. The acquisition of the one did not retard that of the other language. The number of French words was less than the number of Serbian until the twenty-second month. However, almost from the very outset of Douchan's acquisition of the second language, the words in Serbian or in French, for the same concept, had the value of doublets or synonyms. The consciousness of bilingualism manifested itself progressively, and became more intense until he recognized the existence of the two systems of expression. Toward the end of the second year, Douchan began to use French more, and did not make mistakes in addressing people whom he knew: to his Serbian friends he used the Serbian language; to his French friends, the French language. Hybridities in his speech were rare. At the beginning of his third year he spoke in Serbian to his father and mother, knowing well that they also used the French language. Thus, the Serbian became the family language and the French was used in his social relations.

Studies which involved statistical analysis of groups of children include one conducted in London, England by
Davies and Hughes (1927)\textsuperscript{44} which reported the superiority of Jewish over non-Jewish children in arithmetic, English, and general intelligence. However, no measure of bilingualism was used and the Jewish children were assumed to be bilingual. Luh and Wu (1931)\textsuperscript{45} tested 128 children in China on the Pintner-Paterson performance tests, and the Chinese revision of the Binet tests, and found that the average intelligence quotient of these children, on both tests, was equal to approximately 108. This quotient is higher than those usually reported for Chinese (bilingual) children in the United States and similar to the American norms "insofar as the Pintner norms are adequate for the general American population." Other controls such as age, sex, and social class were notably absent, as they were in the study by Stark (1940),\textsuperscript{46} who found that at ten and eleven years of age, bilinguals were superior to monolinguals on one form of a test. At a later age, this trend was reversed, but the measurement was made on a different

\begin{itemize}
\item \textsuperscript{44}M. Davies and H. G. Hughes, "An Investigation into the Comparative Intelligence of Jewish and Non-Jewish children," \textit{British Journal of Psychology}, 18 (1927), 134-36.
\item \textsuperscript{46}W. A. Stark, "The Effect of Bilingualism on General Intelligence: An Investigation Carried Out in Certain Dublin Primary Schools," \textit{British Journal of Educational Psychology}, 10 (1940), 78-9.
\end{itemize}
form of the test. Stark concluded that children of "innate verbal facility" may find early bilingualism an asset to their mental development.

Malherbe (1943)\textsuperscript{47} carried out a study on English-Afrikaans bilinguals in South Africa. Weinreich (1945) reported that Malherbe, in his study, revealed that children from more or less bilingual homes are, on the whole, more intelligent than children from purely monolingual homes, whether English or Afrikaans.

Spoerl (1946)\textsuperscript{48} accounted for the mental conflicts which are associated with bilingualism without depreciating bilingualism. She also reported that her study of the 101 bilingual college students showed that they equaled the monolinguals in verbal intelligence, surpassed the latter slightly in the level of their vocational plans, and excelled them significantly in academic work.

Bertha A. Gamez Trevino (1968),\textsuperscript{49} in her analysis of the difference in achievement levels in arithmetic

\begin{itemize}
\item \textsuperscript{47} E. G. Malherbe, \textit{The Bilingual School: A Study of Bilingualism in South Africa} (London: Longmans Green, 1946).
\item \textsuperscript{48} Dorothy Spoerl, "The Academic and Verbal Adjustment of College Age Bilingual Students," \textit{Journal of Genetic Psychology}, 64 (1944), 139-57.
\item \textsuperscript{49} Bertha Alicia Gamez Trevino, "An Analysis of the Effectiveness of a Bilingual Program in the Teaching of Mathematics in the Primary Grades" (unpublished Ph.D. dissertation, The University of Texas at Austin, 1968).
\end{itemize}
fundamentals and arithmetic reasoning of primary grade children in Nye Elementary School, Webb County, Texas, under a bilingual program of instruction as compared to a similar program of instruction conducted exclusively in English, concluded that for Spanish-speaking children, (1) first graders taught bilingually did significantly better in arithmetic fundamentals but not in arithmetic reasoning, than did first graders taught exclusively in English; (2) third graders taught bilingually did significantly better in arithmetic reasoning, but not in arithmetic fundamentals, than did third graders taught exclusively in English. Scores on California Achievement Tests were used in the comparisons.

Rogers, (1973)\textsuperscript{50} using the t-test and analysis of variance, in a study at the San Diego County Schools, found that statistical difference in the means of the two groups seemed to indicate: (1) that the Bilingual Program did produce a higher self-concept for Spanish-speaking and English-speaking students; (2) the Bilingual Program developed higher academic achievement for Spanish-speakers; and (3) that the ESL Program contributed to higher achievement for the English speakers.

In the St. Lambert Experiment, W. E. Lambert (1973)\textsuperscript{51} found that there were no signs, at the end of the grade IV, of any intellectual deficit or retardation attributable to the bilingual experience, judging from yearly retestings with standard measures of intelligence, nor was there any symptom of their being handicapped on measures of creative thinking. In fact, the experimental children were either at the same level, or in the earlier years, slightly advanced in their capacity to generate imaginative and unusual uses for everyday objects, whether tested in English or French.

In 1974, Carry W. Anderson,\textsuperscript{52} in his study of the effect of bilingualism on scholastic aptitude of Spanish-speaking students in selected binational American Sponsored overseas schools of Colombia, concluded that the bilingual subjects' scholastic aptitudes improved significantly by attending binational schools; that their scholastic aptitude by eleventh grade was, in three of four cases, equal to DAT (Differential Aptitude Tests) standardized means; that much better scholastic aptitude scores can be obtained for native Spanish-speaking students studying in English by using the


TDAD (Tests de Aptitud Diferencial), especially for eighth graders. By using both DAT and TDAD scores for evaluation, bilinguals showed significantly higher scholastic aptitude than monolingual English- or Spanish-speaking students.

Joe Arredondo (1974) stated, in his study, that an examination of the total bilingual program in the Gary School System indicated a positive relationship between the bilingual program, student success, and increased ability to assimilate knowledge and skills. The data further indicated, following the bilingual experience, that measures of intelligence showed Spanish-speaking children to be at a level equivalent to other children in the school system.

Lisa Baldonado (1974) conducted a study to investigate whether kindergarten children whose first language is Spanish developed oral Spanish and English skills more readily through an organized program designed to meet their specific needs. In the analysis of oral language, the Gloria and David Bilingual Spanish/English materials were administered to ten Spanish-speaking students of Puerto Rican background

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at West Street School, in Holyoke, Massachusetts. Oral language competency was measured by means of two oral language assessment instruments: The Gloria and David Oral Language Assessment and the Day Language Screen. The thirty children, ten in each of three groups, were first pretested to assess entry skills; second, aural-oral instructional materials were administered to one group over a period of eight weeks; third, all the students were posttested using the same instruments as for the pretest.

The analysis revealed significant differences in oral language growth as a result of receiving the special treatment. Subjective interpretation also suggested that the children receiving the special attention also became more animated; that allowing them to speak the language assists in second language learning, and more importantly, that children's self-confidence is enhanced when the home language is used for instruction. However, no evidence is given to substantiate this last conclusion.

Rosemary S. Levy (1976)\textsuperscript{55} compared the effects of two contrasting approaches to bilingual instruction and of bilingual education upon the dual language development and

use of a group of first and second grade Italian dominant students. Upon completion of the study, the bilingual groups were found to have achieved significantly greater gains in linguistic maturity as measured by the percentage of syntagmatic responses on the English and Italian Word Association Tasks, and in overall communicative ability and vocabulary development as measured by the Storytelling Task. All other findings were nonsignificant except the degree of linguistic independence as found in favor of the English monolingual group.

Francis X. King (1976) attempted to determine whether or not bilingualism among Mexican-American students relates significantly to their performance in specified cognitive areas measured by standardized tests administered in English at different stages in their development, over an extended period of time. The hypotheses were as follows: (1) Bilingualism, in and of itself, has an adverse effect, with Mexican-American students, on academic achievement; and (2) functioning in two distinct cultural environments, in which one is in a subcultural relationship to the other, has an adverse effect, with Mexican-American students, on academic achievement. Three research groups were formed—

an experimental and two control groups. A computer program was developed to permit the analysis mean score relationship within each of the three groups. This program consisted of a t-test analysis of the difference between means within each group of all tests administered within a given testing area. From the results of the analysis of data between groups, the following conclusions were drawn: (1) Bilingualism, in and of itself, does not have an adverse effect with Mexican-American students, on academic achievement and does not result in abnormal learning patterns; and (2) functioning in two distinct cultural environments, in which one is in a subcultural relationship to the other, does have an adverse effect, with Mexican-American students, on academic achievement.

**Studies Finding No Effect of Bilingualism**

Symonds (1924)\(^{57}\) investigated the effect of attendance at Chinese language schools on ability in the English language. He found the effect to be negligible. He also compared children who came from English-speaking homes with those who came from Chinese-speaking homes. He found the former not at all superior in their English ability,

\(^{57}\)P. M. Symonds, "The Effect of Attendance at Chinese Language Schools on Ability with the English Language," *Journal of Applied Psychology*, 8 (1924), 411-25.
and the two groups of about the same intelligence.

From his study of Japanese and American children, Darsie (1926)\textsuperscript{58} concluded that the differences in general mental capacity between the two groups were slight. On some tests, the Japanese subjects were inferior, while on others the Americans were inferior. However, the social class of these groups was different and no measure of bilingualism was employed.

One of the best studies in this category is that of Hill (1936)\textsuperscript{59} with Italian-American children. Bilingualism was determined by a questionnaire and on the basis of language background. The two groups were matched on sex, age, IQ, socioeconomic class, and mental age. No reliable differences were found in scores on verbal, nonverbal, and performance tests between monolinguals and bilinguals. However, it should be kept in mind that since the two groups were matched on mental age and IQ, only minor differences between them could be expected on intelligence subtests. Thus, there may have been a selection of brighter Italian-American children in this instance.


Zirkel A. Perry (1975) in his study "Bilingual Education Programs at the Elementary School Level: Their Identification and Evaluation," had as purpose to assess the effectiveness of various experimental models of bilingual education with respect to selected pupils and parent outcomes. The subjects of the study were 275 Puerto Rican pupils in four cities where experimental bilingual education programs were established during the 1970-71 school year. The experimental model identified in two of the cities, which provided a major part of the instructional day in Spanish in addition to English, was found to have generally positive results. Analysis of the two experimental models in the other cities, which provided minor amounts of content area instruction in Spanish via peripheral personnel, revealed slight and not significant differences as compared to the regular instructional program in those cities.

Finally, Robert Joseph Holick (1975) in his comparison of Reading Vocabulary and Reading Comprehension

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Skills between bilingual and monolingual Czech-American students, which was designed to investigate whether reading achievement differed between bilingual and monolingual students of the fifth, sixth, and seventh grades, in several schools where the Czech-American culture is significant. It included seven communities in which 282 students were found to be of a Czech-American background, and of this number, 63 were bilingual. The selected bilinguals and monolinguals were then compared in the factors of sex, chronological age, grade level reading vocabulary scores, reading comprehension scores, socioeconomic status, and intelligence scores. Three major conclusions were made, as revealed by the findings: (1) Bilinguals read as well as monolinguals, (2) females read better than males at these grade levels, and (3) students from a high socioeconomic level read better than students from a low socioeconomic level. In regard to the last two variables, the findings are extensions of many previous studies in the areas of sex differences and socioeconomic status as they relate to reading ability. The implications of the research suggest the need for additional research dealing with Czech-American bilingualism.
General Summary of Literature Reviewed

The results of the investigations so far are not sufficiently in agreement with one another to lead to any definite generalizations regarding the intellectual advantages or disadvantages of bilingualism on the cognitive characteristics. This difference in the results is not surprising in view of the differences in methods of investigation and the conditions of bilingualism in the various places where the studies have taken place.

The study presented herein will attempt to present the data gathered from tests given to Chicago Public School children. It is an exploratory study and does not settle the general question of whether the overall effects of bilingual education are beneficial or detrimental. Indeed, it will require many such exploratory studies to arrive at an answer.
CHAPTER III

PROCEDURES OF THE STUDY

Program Description

Bilingual-Bicultural education programs, funded by the State of Illinois in Chicago Public Schools during the fiscal year 1974, were implemented in 60 centers or schools serving 12,464 students. Nine centers were at the preschool level, forty-six at the primary and elementary school levels, and five at the high school level. The students were served by 370 bilingual-bicultural teachers and 118 teacher aids. Of these sixty centers or schools, thirty-nine were opened for their first year of operation, and twenty-one were funded for their second or third year. The researcher was interested in investigating the effects of bilingual education on the Reading and Mathematics scores of the Spanish-speaking children in two schools and so, two early decisions were made: (1) to include one school in its first year of operation, and (2) to include another school in its second year of operation. Therefore, out of the twenty-one bilingual centers already in operation for at least one year, one school was randomly selected and out of the thirty-nine bilingual centers in their first year of operation, another school was also randomly selected.
The Mincel Talcot Bilingual Center, in its first year of operation, and the Joseph E. Gary Bilingual Center, in its second year of operation were selected for participation in the study.

The major goals of bilingual education, as prescribed in the guidelines of the Office of the Superintendent of Public Instruction for the State of Illinois (OSPI) were observed in planning the center's program objectives. In general, the programs offered intensive instruction in the Spanish language arts, in the English language arts, and in content areas (mathematics, science, social studies) as well as organized activities to maintain the student's cultural customs and values as they learned about those of the United States. Special activities were also implemented to improve the student's self-acceptance and identity.

Various instructional approaches have been implemented in the bilingual centers in the Chicago Public Schools. At the elementary and upper grade levels, different teaching models have been used also with a bilingual approach, including the self-contained, the team teaching, the pull-out, and the departmentalized models. In the present study, the bilingual or experimental schools used the self-contained approach.
Objectives and Hypotheses

The major goals of the bilingual education programs in this study were the ones presented by the State of Illinois Guidelines for Bilingual-Bicultural Education Programs, as follows:

Children in the bilingual program will achieve fluency and literacy in two languages.

Children in the bilingual program will achieve at a rate commensurate with their own age, ability, and grade level in all school subject areas.

Children in the bilingual program will demonstrate growth in self-esteem.

Children in the bilingual program will be provided with a coordinated and integrated learning environment through effective coordination with regular school program.

All teachers and staff members of participating schools will be involved in a comprehensive inservice training program.

Parents and other community members will be involved in the planning, implementation, and evaluation of the bilingual program.

Each bilingual project will implement an evaluation design to assess its effectiveness.

In view of these objectives, the following hypotheses were to be tested:

A. There is no significant difference in gains made by the control and the experimental groups at the same grade levels after the experimental period, as determined by the Comprehensive Tests of Basic Skills (CTBS) in terms of Reading.
B. There is no significant difference in gains made by the control and the experimental groups at the same grade levels after the experimental period, as determined by the Bilingual Test Battery (BTB) in terms of Mathematics.

The tests and levels used for grades one through four, in the present study, were determined by the Chicago Board of Education.

**Evaluation**

In compliance with OSPI guidelines, evaluations of the bilingual education programs in the Chicago Public Schools were made. This study includes the test evaluations in which the programs' instructional component was assessed in terms of the student achievement in Reading and Mathematics.

In evaluating the overall effects of the instructional program, the question to be answered was, "Did the students enrolled in the bilingual program show a gain in Reading and Mathematics equal to, or greater than the students not enrolled in the program." To answer this question, a comparison group was established within each of the two schools. Program evaluation was made through an assessment of student gains between the pretest and posttest period (September-May). In order to allow for differences in individual program structures and objectives, and to minimize testing requirements, a treatment-comparison group
design was developed; the group having a bilingual program was considered the treatment or experimental group, and the regular school program group was considered the comparison group. All groups were tested in September and posttested in May. The results have been statistically analyzed and organized into a presentation and interpretation of posttest versus pretest differences by content area (Reading and Mathematics) and grade levels one through four.

**Data Collection**

Parents, administrators, and teachers worked together in the planning, implementation, and evaluation of the aforementioned programs. All of them participated in answering questionnaires and attended inservice sessions conducted by the Chicago Board of Education, which collaborated with the schools and parents in a very responsible and organized manner.

The pretesting and posttesting were administered by teachers participating in the study. Two weeks prior to the pretest, and two weeks prior to the posttest, teachers received, from the Chicago Board of Education, inservice in test administration. In addition, three separate forms of informational content were distributed to the two schools participating in this experiment at the beginning of the school year, to collect program data; the "Spanish-sur
named Student Data Sheet," "Program Information," and the "Staff Information" forms. (See Appendix A.)

Observations of the program's process component were made by a team of professional educators from the Chicago Board of Education during on-site visits throughout the school year. The researcher of this study made random visits to the schools to verify that the two groups (treatment and comparison) were different in approach and that bilingual or monolingual education was, indeed, taking place. The observations concurred with the Bilingual Education Specialist from the Chicago Board of Education and indicated that Bilingual Education and Monolingual Education took place in the treatment and comparison group, respectively. (See format used by the researcher for these visits to schools, Appendix B.)

Description of Schools

The two schools that were randomly selected to participate in this study are described as follows:

The Gary School entered its second year of operation of a bilingual program in fiscal 1974. The program served 125 students, grades 1-6. The center was staffed by four teachers funded by the state, and two teachers funded by the Board of Education. All of the teachers were bilingual-bicultural. (See Appendix C for more information on teachers.)
The student composition of the school is distributed as follows: 60.8 percent Latin, 38.9 percent Caucasian, .2 percent Black, .1 percent Asian American. The total student population was 1,163.

The Talcot School entered its first year of operation of a bilingual program in fiscal year 1974. The program served 220 students, grades 1-6. Staffing consisted of three teachers funded by the state, and three teachers funded by the Board of Education. All of the staff members were bilingual-bicultural. The composition of the school is distributed as follows: 70.7 percent Latin, 25.7 percent Caucasian, 2.6 percent Black, .1 percent American Indians, .9 percent Asian American. The total student population was 1,407.

Table 1 shows the distribution of the students participating in the study.

Limitation of the Study

The field of bilingual education has not been explored in many of its basic aspects, such as common definitions and scope of bilingual education, much less in its method and evaluation. The present study was limited to consider the effects that two bilingual programs have for the Spanish-speaking students. In the two schools selected there were more than 50 percent of Spanish-speaking
### TABLE 1

**NUMBER OF STUDENTS WHO PARTICIPATED IN STUDY**

<table>
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<tr>
<th>Grade</th>
<th>School #1</th>
<th>School #2</th>
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<td>Experimental</td>
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<td>4</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>Totals</td>
<td>99</td>
<td>91</td>
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population. In one school there was a predominant number of Mexican-Americans; in addition, the other school had a predominant number of Puerto Ricans, although Mexican-Americans were enrolled too. For this study both groups were considered Spanish-speaking. Ideally, the scope of the study should have provided for all bilingual programs of the City of Chicago, including perhaps, those designed for the Greek and the Chinese-Americans. However, this study was limited to the Gary and to the Talcot schools. Funding for these programs must be considered also as a major limitation. In establishing the scope of the present study, a serious effort was made to prioritize or establish criteria for limiting or focusing on a particular client or group--the Spanish-speaking. Even though the study is limited, the results can be, by analogy, interpreted and may be applied to other similar bilingual programs.

The Chicago Board of Education selected the tests and the level of testing to be used in the different grades and also conducted the inservice training for the teachers administering the tests. The researcher of this study, therefore, had no control over this aspect of the instrument.

**Significance of the Study**

The Federal Government, states, and local boards are recognizing, the importance of bilingual education. Many students and teachers now agree that the life-style homogeneity is no longer the dream of America, the multicultural appeal of food, clothing folklore, languages are being
accepted as a way of life. While it could be an exaggeration to say that Spanish speakers have contributed enormously to this process, it is realistic to assume that their role in it will become increasingly important in the last quarter of this century. Demographic data seem to indicate the relevancy of this statement. Examples:

The number of English speakers in the Western Hemisphere is only slightly larger than that of Spanish speakers. Trends in population growth would seem to indicate a probable reversal of this before the end of this century. (See Appendix D.)

The United States has the fifth largest concentration of Spanish speakers in the Americas. Of the eighteen Spanish American countries, only Mexico, Argentina, Colombia, and Peru have populations exceeding the number of Spanish speakers in the U.S. (See Appendix E.)

The U.S. Immigration and Naturalization Service estimates that during 1971-72 legal immigration from Spanish-speaking countries was approximately 100,000. This figure is average of the yearly legal entries every year from Latin America. (U.S. Dept. of Justice, 1972).

The median age of Chicanos in the U.S. is 18.6 (18.0 for Puerto Ricans), while that of the total white population is 28. (U.S. Dept. of Com., 1971).

The birthrate of Spanish-speaking groups in the U.S. is nearly twice as high as that of English speakers, surpassing even the Black birthrate. (U.S. Dept. of Com., 1969).

From 1968 to 1970 the total number of children attending public schools in the U.S. increased by approximately 3.5 percent. During that same period the number of Spanish-speaking children in school increased by 13.6 percent. (U.S. Dept. of Com., 1973).
The Board of Education of the City of Chicago, in their Racial Survey of student population, published in September, 1974, indicates the following facts:

(1) Of the 536,657 students surveyed and included in the report, 57.9 percent (310,880) were Black, 28.4 percent (151,290) were Caucasian, and 12.7 percent (67,952) were in the Spanish Surnamed American category. Asian Americans and American Indians comprised the remaining 6,536 students with percentages of 1.0 and .2, respectively.

(2) Numerical decreases from the 1973 survey were noted in the Caucasian, Black and American Indian categories. The percentage of Caucasians in the Chicago public schools declined, while that of Blacks rose slightly and no change was recorded for American Indians. The percent of Spanish Surnamed Americans increased from 11.7 to 12.7 percent, representing a total of 4,222 more students, primarily of Mexican and Puerto Rican origin. Asian Americans also showed an increase of 294 students. (See Appendix F.)

It is appropriate to note at this point, that the studies that have been made on the effects of bilingual education have used "bilinguals" for the experimental group and "monolinguals" for the control group. The present study has "bilinguals" in both the experimental and the control groups.

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Instruments Used in the Study

Following is a brief description of the instruments which were used to measure the various aspects of the instruction component in the present study:

A. The Comprehensive Tests of Basic Skills (CTBS) (Reading and Language Subtests), as described in the manual, is a battery of tests with alternate forms divided into four levels that overlap at grades 4, 6, and 8. In the present study, level I is used for grades 1 and 2; and level II is used for grades 3 and 4. In the norm reference, this includes Spanish Americans as well as other groups.

Each battery of tests was developed to test skills in areas of reading, language and study skills. The results of the CTBS have value for both survey of individual and group performance in basic skills and analysis of learning.

The CTBS assessment is not intended to measure achievement in specific course content reflected in text-books for various grade levels. Performance on these tests, however, is necessarily dependent on the possession of relevant knowledge and is affected by the grade level at which the skill is first introduced. The objectives of the tests are classified under four broad intellectual processes: Recognition and/or application, translation, interpretation, and analysis. The items in the CTBS in the four skill areas measure, generally, the following abilities:
1. The ability to recognize and/or apply techniques, including performing fundamental operations.

2. The ability to translate or convert concepts from one kind of language (verbal and symbolic) to another.

3. The ability to comprehend concepts and their interrelationships.

4. The ability to extend interpretation beyond stated information.

The subtests being considered for this evaluation are in the skill areas of reading and language; therefore, only the statistical measures for these two subtests are important for this study.

B. **Bilingual Test Battery (BTB)**

This battery consists of four instruments designed to measure achievement in content (mathematics, social studies and science), change in attitude in oneself and others, and vocational maturity. The two levels were administered as follows: Test level I was used for grades 1 and 2; and test level II for grades 3 and 4.

Items were constructed on the basis of standardized and teacher-made tests reviewed, and on the basis of program objectives. The battery is available in English and Spanish and the content validity is assured, according to the test manual. In the present study the English form was used for the pretest and posttest.
Statistical Methods

The means and standard deviation will be presented for all data by school, groups, and grade level. The pre-test scores will be subjected to a One-Way Analysis of Variance, to determine if any nonrandom difference existed prior to the experimental period.

The difference between the means of pre- and posttest scores will be designated as gain, whether positive or negative, and will also be presented. These gains will then be subjected to a One-Way Analysis of Variance to determine whether nonrandom variation exists in any of the comparisons. Those comparisons which do show significant variation will be further analyzed by use of the t-test to enable specific comparisons of control and experimental groups, to be made so that the variation can be pinpointed.

Means and standard deviation for pre- and post, and gain scores were obtained from the computation center, University of North Carolina, using a 9 track tape, 1600 BPI, IBM standard labels, and the Statistical Package for the Social Sciences (SPSS), version 6.0. Also, statistical tests were made at the Loyola University of Chicago computer center, using the SPSS version 6.1. The null hypotheses were accepted or rejected at the .05 level.
CHAPTER IV

RESULTS OF STUDY

Raw Data Presentation

The purpose of the present study has been to investigate if there was any effect of bilingual education on the reading and mathematics abilities of the Spanish-speaking children in two Chicago Public Schools. In evaluating the effects of the instructional program the question to be answered is, "Do the students in the experimental programs show a gain in reading and mathematics equal or greater than the students in the control groups?"

The experimental groups have received bilingual instruction for eight months, the control groups received monolingual instruction for the same period of time. Both groups were pretested in reading and mathematics using as instruments the CTBS and the BTB tests.

The raw data is presented in the following pages. Tables 2 and 3 give the means and standard deviation of pre- and posttest scores in reading for the control and the experimental groups of the two schools and for grades one through four, as determined by the CTBS scores. A small decrease is noted between the pre- and posttest scores of the first grades in school one, a mean of -0.291, and standard deviation of 9.287 were seen in the experimental
### TABLE 2

**MEANS AND STANDARD DEVIATION OF PRETEST SCORES:**
**CTBS (READING)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>School #1</th>
<th>School #2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental</td>
<td>Control</td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>1</td>
<td>49.812</td>
<td>10.00</td>
</tr>
<tr>
<td>2</td>
<td>43.400</td>
<td>11.905</td>
</tr>
<tr>
<td>3</td>
<td>42.347</td>
<td>12.380</td>
</tr>
<tr>
<td>4</td>
<td>43.687</td>
<td>6.794</td>
</tr>
</tbody>
</table>
# TABLE 3

MEANS AND STANDARD DEVIATION OF POSTTEST SCORES:
CTBS (READING)

<table>
<thead>
<tr>
<th>Grade</th>
<th>Experiment School #1</th>
<th>Control School #1</th>
<th>Experiment School #2</th>
<th>Control School #2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>1</td>
<td>49.522</td>
<td>10.257</td>
<td>54.000</td>
<td>6.860</td>
</tr>
<tr>
<td>2</td>
<td>44.494</td>
<td>11.059</td>
<td>50.303</td>
<td>8.263</td>
</tr>
<tr>
<td>3</td>
<td>47.516</td>
<td>11.420</td>
<td>50.113</td>
<td>7.700</td>
</tr>
<tr>
<td>4</td>
<td>49.450</td>
<td>8.078</td>
<td>52.423</td>
<td>6.819</td>
</tr>
</tbody>
</table>
group, and a mean of -0.010, standard deviation, 8.314 in the control group. Decrease is also noted between the pre- and posttest scores in the second school and in the control groups; mean -2.648, standard deviation 9.031, for the second grade; mean -1.704, standard deviation 9.507, for the third grade.

Gains are noted in school one as follows: mean, 1.094, standard deviation 11.066; mean 5.169, standard deviation 8.210; mean 5.762, standard deviation 8.587 for the second, third and fourth grades respectively in the experimental groups, and a mean 3.573, standard deviation 9.578; mean 4.810, standard deviation 10.410; mean 7.430, standard deviation 10.200, for the second, third and fourth grades, respectively in the control groups. Increases are also noted in the second school as follows: mean 2.631, standard deviation 7.036; mean 2.908, standard deviation 8.119; mean 8.469, standard deviation 11.773; mean 3.038, standard deviation 10.702, for the first, second, third and fourth grades, respectively in the experimental groups and mean 2.744, standard deviation 7.142 for the first grade of the control group (Table 4).

Tables 5 and 6 give the means and standard deviation of the pre- and posttest scores in mathematics for the
TABLE 4
MEANS AND STANDARD DEVIATION OF GAINS BETWEEN PRETEST AND POSTTEST SCORES:
CTBS (READING)

<table>
<thead>
<tr>
<th>Grade</th>
<th>School #1 Experimental M</th>
<th>SD</th>
<th>School #1 Control M</th>
<th>SD</th>
<th>School #2 Experimental M</th>
<th>SD</th>
<th>School #2 Control M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-0.291 9.287</td>
<td></td>
<td>-0.010 8.314</td>
<td></td>
<td>2.631 7.036</td>
<td></td>
<td>2.744 7.142</td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 5

**MEANS AND STANDARD DEVIATION OF PRETEST SCORES:**

**BTB (MATHEMATICS)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>School #1 Experimental M</th>
<th>School #1 Control M</th>
<th>School #2 Experimental M</th>
<th>School #2 Control M</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>48.872</td>
<td>51.635</td>
<td>43.996</td>
<td>41.509</td>
</tr>
<tr>
<td></td>
<td>9.292</td>
<td>6.025</td>
<td>7.801</td>
<td>7.804</td>
</tr>
<tr>
<td>2</td>
<td>44.736</td>
<td>36.968</td>
<td>45.591</td>
<td>47.064</td>
</tr>
<tr>
<td>3</td>
<td>53.736</td>
<td>51.623</td>
<td>50.365</td>
<td>54.364</td>
</tr>
<tr>
<td></td>
<td>5.151</td>
<td>7.520</td>
<td>6.404</td>
<td>7.588</td>
</tr>
<tr>
<td>4</td>
<td>49.356</td>
<td>45.755</td>
<td>49.987</td>
<td>46.100</td>
</tr>
<tr>
<td></td>
<td>7.681</td>
<td>8.124</td>
<td>8.462</td>
<td>8.681</td>
</tr>
</tbody>
</table>
### TABLE 6

**MEANS AND STANDARD DEVIATION OF POSTTEST SCORES:**

**BTB (MATHEMATICS)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>School #1</th>
<th></th>
<th>School #2</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental</td>
<td>Control</td>
<td>Experimental</td>
<td>Control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td>1</td>
<td>49.416</td>
<td>6.128</td>
<td>46.171</td>
<td>6.117</td>
<td>45.774</td>
</tr>
<tr>
<td>2</td>
<td>47.904</td>
<td>6.934</td>
<td>41.362</td>
<td>8.736</td>
<td>51.769</td>
</tr>
<tr>
<td>3</td>
<td>53.132</td>
<td>4.984</td>
<td>48.385</td>
<td>8.840</td>
<td>54.448</td>
</tr>
<tr>
<td>4</td>
<td>48.836</td>
<td>6.625</td>
<td>47.473</td>
<td>7.593</td>
<td>53.391</td>
</tr>
</tbody>
</table>
experimental and the control groups for all the grades and for the two schools; the scores are determined by the BTB scores. Decreases are noted in schools one as follows: a mean of -0.604, standard deviation 7.287; mean -0.520, standard deviation 8.721, for the third and fourth grades in the experimental groups. Also, a mean of -5.465, standard deviation 8.196; mean -3.238, standard deviation 6.196, for the first and third grades in the control groups. In school two decreases were noted thus: mean -.255, standard deviation 8.441; mean -8.691, standard deviation 10,262; mean -7.500, standard deviation 8.835; mean -4.791, standard deviation 10.734 for the first, second, third and fourth grades, respectively, in the control groups.

Increases are noted in school one also: mean 0.544, standard deviation 8.231; mean 3.168, standard deviation 9.244 for the first and second grades in the experimental groups. In the control groups increases are indicated as follows: mean 4.394, standard deviation 10.528; mean 1.721, standard deviation 9.883 for the second and fourth grades. Increases are also shown in school two as follows: mean 1.778, standard deviation 8.309; mean 6.178, standard deviation 8.621; mean 4.083, standard deviation 6.311; mean 5.404, standard deviation 8.609 for the first, second, third and fourth grades in the experimental groups (Table 7).
TABLE 7

MEANS AND STANDARD DEVIATION OF GAINS BETWEEN PRETEST AND POSTTEST SCORES:
BTB (MATHEMATICS)

<table>
<thead>
<tr>
<th>Grade</th>
<th>School #1 Experimental M</th>
<th>SD</th>
<th>School #1 Control M</th>
<th>SD</th>
<th>School #2 Experimental M</th>
<th>SD</th>
<th>School #2 Control M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.544</td>
<td>8.231</td>
<td>-5.465</td>
<td>8.196</td>
<td>1.778</td>
<td>8.309</td>
<td>-0.255</td>
<td>8.441</td>
</tr>
<tr>
<td>3</td>
<td>-0.604</td>
<td>7.287</td>
<td>-3.238</td>
<td>6.196</td>
<td>4.083</td>
<td>6.311</td>
<td>-7.500</td>
<td>8.835</td>
</tr>
<tr>
<td>4</td>
<td>-0.520</td>
<td>8.721</td>
<td>1.721</td>
<td>9.883</td>
<td>3.404</td>
<td>8.609</td>
<td>-4.791</td>
<td>10.734</td>
</tr>
</tbody>
</table>
Results of Analysis

Analysis of variance and t-tests for pretest scores

Reading.—In combining the two schools, the experimental and control groups, the analysis of variance shows no significant difference for the first grade (2.260 F ratio, 0.085 probability) and shows significant differences for the second (3.214 F ratio, 0.026 probability), third, (3.293 F ratio, 0.023 probability) and fourth (4.873 F ratio, 0.004 probability) grades (Table 8). The level of significance is reached at the .05 level for the second grade, .005 level for the third grade, and .025 level for the fourth grade.

The t-test (Table 9) shows no significant difference between the control and the experimental groups for all the grades, one through four, in school one. Again, the t-test indicates no significant difference for the first and fourth grades in school two. These results give an indication on the hypotheses as stated, that there is no significant difference for the experimental and the control groups at the beginning of the study, with the exception of grades two and three where significant differences were found between the experimental and the control groups at the .025 level.
### TABLE 8

**ONE WAY ANALYSIS OF VARIANCE OF PRETEST SCORES: EXPERIMENTAL AND CONTROL GROUPS WITHIN GRADE COMPARISON, GRADES 1-4: CTBS (READING)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>F Ratio</th>
<th>Probability Level</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2.260</td>
<td>0.085</td>
<td>NS</td>
</tr>
<tr>
<td>2</td>
<td>3.214</td>
<td>0.026</td>
<td>*</td>
</tr>
<tr>
<td>3</td>
<td>3.293</td>
<td>0.023</td>
<td>*</td>
</tr>
<tr>
<td>4</td>
<td>4.873</td>
<td>0.004</td>
<td>*</td>
</tr>
</tbody>
</table>

* = Significant at .05 level  
NS = Not significant
### TABLE 9

**t-TEST VALUE FOR EXPERIMENTAL VERSUS CONTROL GROUPS, PRETEST SCORES: CTBS (READING)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>School #1 t-values</th>
<th>Sig.</th>
<th>School #2 t-values</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-1.689</td>
<td>NS</td>
<td>1.045</td>
<td>NS</td>
</tr>
<tr>
<td>2</td>
<td>-1.206</td>
<td>NS</td>
<td>2.32</td>
<td>*</td>
</tr>
<tr>
<td>3</td>
<td>-0.941</td>
<td>NS</td>
<td>2.418</td>
<td>*</td>
</tr>
<tr>
<td>4</td>
<td>-0.648</td>
<td>NS</td>
<td>2.004</td>
<td>NS</td>
</tr>
</tbody>
</table>

* = Significant at .05 level  
NS = Not significant
Mathematics.--In the two schools, and combining the experimental and the control groups, the analysis of variance shows no significant difference for grades three and four, but highly significant variation for the first and second grades (7.373 F ratio, 0.000 probability; 7.875 F ratio 0.000 probability, respectively) at the .001 level of significance (Table 10).

The t-test (Table 11) indicates no significant difference between the control and the experimental groups for all the grades in the two schools, with the exception of the second grade of the first school which shows significance at the .005 level. Here the second graders of the experimental group had higher pretest scores than the control group, a mean of 44.736, standard deviation 9.045 for the experimental group and a mean of 36.968, standard deviation 6.272 for the control group.

Analysis of variance of gains and t-tests in pretest and posttest scores

Reading.--For the two schools, combining the control and the experimental groups, the analysis of variance (Table 12) shows no significant difference for the first and second grades (0.956 F ratio, 0.418 probability; 2.006 F ratio, 0.117 probability, respectively). It is indicated that there is significant difference in the third and
TABLE 10

ONE WAY ANALYSIS OF VARIANCE OF PRETEST SCORES:
EXPERIMENTAL AND CONTROL GROUPS WITHIN GRADE
COMPARISONS, GRADES 1-4: BTB (MATHEMATICS)

<table>
<thead>
<tr>
<th>Grade</th>
<th>F Ratio</th>
<th>Probability Level</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7.373</td>
<td>0.000</td>
<td>*</td>
</tr>
<tr>
<td>2</td>
<td>7.875</td>
<td>0.000</td>
<td>*</td>
</tr>
<tr>
<td>3</td>
<td>1.486</td>
<td>0.222</td>
<td>NS</td>
</tr>
<tr>
<td>4</td>
<td>1.727</td>
<td>0.166</td>
<td>NS</td>
</tr>
</tbody>
</table>

* = Significant at .001 level  
NS = Not significant
TABLE 11

**t-TEST VALUE FOR EXPERIMENTAL VERSUS CONTROL GROUPS PRETEST SCORES: BTB (MATHEMATICS)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>School #1 t-values</th>
<th>Sig.</th>
<th>School #2 t-values</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.359</td>
<td>NS</td>
<td>0.844</td>
<td>NS</td>
</tr>
<tr>
<td>2</td>
<td>-3.826</td>
<td>*</td>
<td>-0.416</td>
<td>NS</td>
</tr>
<tr>
<td>3</td>
<td>-1.191</td>
<td>NS</td>
<td>-1.554</td>
<td>NS</td>
</tr>
<tr>
<td>4</td>
<td>-1.693</td>
<td>NS</td>
<td>1.205</td>
<td>NS</td>
</tr>
</tbody>
</table>

*Significant at .005 level
NS Not significant
TABLE 12

ONE WAY ANALYSIS OF VARIANCE OF GAINS IN PRETEST AND POSTTEST SCORES: EXPERIMENTAL AND CONTROL GROUPS IN SCHOOLS #1 AND #2, WITHIN GRADE COMPARISONS, GRADES 1-4: CTBS (READING)

<table>
<thead>
<tr>
<th>Grade</th>
<th>F Ratio</th>
<th>Probability Level</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.956</td>
<td>0.418</td>
<td>NS</td>
</tr>
<tr>
<td>2</td>
<td>2.006</td>
<td>0.117</td>
<td>NS</td>
</tr>
<tr>
<td>3</td>
<td>3.994</td>
<td>0.010</td>
<td>*</td>
</tr>
<tr>
<td>4</td>
<td>5.851</td>
<td>0.001</td>
<td>*</td>
</tr>
</tbody>
</table>

* = Significant at .05 level
NS = Not significant
fourth grades at the .01 and .001 levels.

The t-test (Table 13) shows no significant difference between the control and the experimental groups for all four grades in school one. Also, there is no significant difference for first and second grades in school two, but it indicates significant differences for third grade at the .005 level and the fourth grade at .05 level of school two. In all cases it was the experimental group which had significantly higher gains as compared to the control group.

**Mathematics.**--For both schools, and combining the control and the experimental groups, the analysis of variance indicates no significant difference for the fourth grade (Table 14). It shows significant difference for first grade (4.410 F ratio, 0.006 probability) and significant difference also for second (6.368 F ratio, 0.001 probability) and third (8.682 F ratio, 0.000 probability) grades at the 0.025 level.

The t-test (Table 15) indicates significant difference in the first grade at the .005 level of school one and in favor of the experimental group. It shows no significant differences for the second, third, and fourth grades of school one. It shows no significant difference for the first grade of school two, and indicates significant differences for the second and third grades of school.
TABLE 13

_t-TEST VALUE FOR EXPERIMENTAL VERSUS CONTROL GROUPS, GAINS BETWEEN PRETEST AND POSTTEST SCORES: CTBS (READING)_

<table>
<thead>
<tr>
<th>Grade</th>
<th>School #1 t-values</th>
<th>Sig.</th>
<th>School #2 t-values</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-0.123</td>
<td>NS</td>
<td>0.045</td>
<td>NS</td>
</tr>
<tr>
<td>2</td>
<td>-0.925</td>
<td>NS</td>
<td>-1.811</td>
<td>NS</td>
</tr>
<tr>
<td>3</td>
<td>0.149</td>
<td>NS</td>
<td>-2.801</td>
<td>*</td>
</tr>
<tr>
<td>4</td>
<td>0.237</td>
<td>NS</td>
<td>-1.717</td>
<td>*</td>
</tr>
</tbody>
</table>

* = Significant at .05 level
NS = Not significant
TABLE 14

ONE WAY ANALYSIS OF VARIANCE OF GAINS IN PRETEST AND POSTTEST SCORES: EXPERIMENTAL AND CONTROL GROUPS IN SCHOOLS #1 AND #2, WITHIN GRADE COMPARISONS, GRADES 1-4: BTB (MATHEMATICS)

<table>
<thead>
<tr>
<th>Grade</th>
<th>F Ratio</th>
<th>Probability Level</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>4.410</td>
<td>0.006</td>
<td>*</td>
</tr>
<tr>
<td>2</td>
<td>6.368</td>
<td>0.001</td>
<td>**</td>
</tr>
<tr>
<td>3</td>
<td>8.682</td>
<td>0.000</td>
<td>**</td>
</tr>
<tr>
<td>4</td>
<td>2.167</td>
<td>0.096</td>
<td>NS</td>
</tr>
</tbody>
</table>

* = Significant at .05 level  
** = Significant at .001 level  
NS = Not significant
### TABLE 15

**$t$-TEST VALUE FOR EXPERIMENTAL VERSUS CONTROL GROUPS, GAINS BETWEEN PRETEST AND POSTTEST SCORES: BTB (MATHEMATICS)**

<table>
<thead>
<tr>
<th>Grade</th>
<th>School #1 t-values</th>
<th>Sig.</th>
<th>School #2 t-values</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-2.730</td>
<td>*</td>
<td>0.644</td>
<td>NS</td>
</tr>
<tr>
<td>2</td>
<td>0.338</td>
<td>NS</td>
<td>4.285</td>
<td>*</td>
</tr>
<tr>
<td>3</td>
<td>-1.471</td>
<td>NS</td>
<td>4.360</td>
<td>*</td>
</tr>
<tr>
<td>4</td>
<td>0.899</td>
<td>NS</td>
<td>2.320</td>
<td>*</td>
</tr>
</tbody>
</table>

* = Significant at .005 level  
NS = Not significant
two, at the 0.005 level, as well as significant difference for the fourth grade at the 0.025 level of school two. All these significant differences are in favor of the experimental groups.

Summary of Analysis

The results of this study indicate no significant differences between the experimental and the control groups in reading in school one, and that significant difference in reading was noted only in the third and fourth grades in school two. There is no significant difference in mathematics for school one, except for the first grade that shows significant difference. In school two, however, there is no significant difference for the first grade, and significant differences exist for the second, third, and fourth grades. All the significant differences noted are in favor of the experimental groups, however, the study does not indicate that the effects of bilingual education on the cognitive characteristics of the Spanish-speaking students are in any way positive at the .05 level.

Figures 8 through 15 give a summary of the results of the present study, indicating the increases or decreases between the pre- and posttest scores in the experimental and the control groups in reading and mathematics for school one and school two. It is indicated that the
Fig. 8.--Grade 1: CTBS (Reading) Raw Scores
Fig. 9.—Grade 2: CTBS(Reading) Raw Scores
Fig. 10.--Grade 3: CTBS (Reading Raw Scores
Fig. 11.—Grade 4: CTBS (Reading) Raw Scores
Fig. 12.—Grade 1: BTB (Mathematics) Raw Scores
Fig. 13.--Grade 2: BTB (Mathematics) Raw Scores
Fig. 14.—Grade 3: BTB (Mathematics) Raw Scores
Fig. 15.--Grade 4: BTB (Mathematics) Raw Scores
differences are in favor of the experimental groups in all of the cases, and that it can be concluded that bilingual education has some effect on the reading and mathematics scores in the two schools of the study. The results, however, do not show any consistent trend of this positive effect. School one, for instance, indicates no significant difference in reading in all four grades, but indicates significant difference in mathematics for the first grade. School two indicates no significant difference for first grade in mathematics, and significant differences in the second, third and fourth grades. Moreover, the second school indicated significant differences in reading between the control and the experimental groups in the third and fourth grades.

There is, indeed, no indication that the effects of bilingual education in the present study were detrimental. In fact, the results of the analysis shows advantages in few cases, but it never shows disadvantages in any of the cases, in either of the schools, for the experimental groups.

It must be noted here that the study did not include a large sample of schools with sufficient number of students and under different circumstances—social and economic. The study covered only two schools and the number of students was relatively small. However, while general conclusions can not be drawn from the results, it has been possible to note
the absence of any negative effects of bilingual education within this particular small sample.

The researcher again emphasizes that the Chicago Board of Education chose the tests and the level of testing in the different grades, that the administration of the inservice for teachers who administered the tests was also conducted by the Board of Education.
CHAPTER V

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

Discussion

The hypotheses of the present study were that (a) there was no significant difference between the experimental and the control groups at the beginning of the study, as determined by two test scores: The Comprehensive Tests of Basic Skills (CTBS), and the Bilingual Test Battery (BTB), in terms of reading and mathematics; (b) that there was no significant difference in gains made by the control and the experimental groups at the same grade levels after the experimental period of eight months, as determined by the above test scores, in terms of reading and mathematics.

The hypotheses, as stated by the researcher, are partially verified by the results of the study. In terms of reading, the hypothesis is accepted in school one; school two, however, presents two significant differences between the control and the experimental groups for the third and fourth grades. Let it be noted that school two was in its first year of operation with a bilingual program, while school one was in its second year of operation.
with a bilingual program. Bilingual education had no effect in the latter case in reading. This is the reverse of what might have been expected. It is also remarkable to note that even though the control group had higher scores in the pretest score in reading for the second and third grades in school two, at the end of the study the experimental group had significantly higher gains, even in the third grade which had started with a lower score.

In terms of mathematics, the gains are again in favor of the experimental groups in the first grade of school one, which has been operating a bilingual program for two years. Moreover, the second, third and fourth grades in school two, in its first year of operating a bilingual program, the experimental group also showed significantly higher gains.

Was bilingual instruction the real factor of the gains in the cases of significance? Since the gain is consistent in the school where bilingual education was only recently introduced, and since there was no significant difference in the school where bilingual education had already been operating for one year, this seems to indicate that the instruction in two languages was helpful, and that the more time a bilingual program is in operation,
the less the effect will be on the reading and mathematical scores of the child. This statement is presented as data rather than as a conclusion. It is perhaps fair to say that the results are different and inconclusive because there was more than one school. Just as in the study made by Pinter, this study seems to indicate that the more schools involved in this type of experimentation, the less conclusive the results will be. In the present study the trend seems to be that there is no significant difference in the one school, but that there is some significant differences in the other school. In the case of Pinter, the three kinds of results were found in his experiment with three schools: The bilinguals were found superior to the monolinguals in one school, the bilinguals were found inferior to the monolinguals in a second school, and the bilinguals were found neither superior nor inferior to the monolinguals in a third school. With these kind of results there is no way to conclude one way or another on the effects of bilingual education, however, it is interesting to note the trend of this kind of study; when two, three or more schools are involved, the results seem to be inconclusive.

McCarthy stated that "there is considerable evidence in the literature to indicate that there exists a marked relationship between socioeconomic status of the family and the child's linguistic and cognitive development." From past research, it is well established that girls are more advanced than boys in language development, especially in the early years. They have a larger vocabulary and are more skilled in the use of words. Since most intelligence tests draw heavily on verbal skills, it is advisable to have approximately equal numbers of boys and girls in the groups to be compared. Furthermore, groups should also be matched for age. The educational background of children may also affect their performance on standardized tests. This variable, however, could be approximately controlled by using subjects from the same schools or school system.

The results of the present study are not influenced by age, nor by sex, nor by socioeconomic status. All the groups in the two schools were in the inner city and the students were of the same socioeconomic status, were of

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the same age according to grades, and were, even though not intended, more or less the same in number for boys and girls. The subjects, on the other hand, were not only from the same schools, the experimental and the control group of each school, but they were all bilinguals.

The results of the study are not sufficiently in agreement to lead to any definite generalizations regarding the effects of bilingual education on the reading and mathematics ability of the Spanish-speaking students. The difference in the results of the two schools seems surprising, and the only explanation for the difference seems to be the fact that school one was in its second year of operation of a bilingual program, while school two was in its first year of operation of a bilingual program. This leads the investigator to say that bilingualism is not of a single kind, uniform in its appearance and its results for the student. The social and psychological conditions accompanying bilingualism and varying from place to place, influence most probably its results, and should be clearly stated in each instance. On the other hand, the time and duration of a bilingual program should also be stated when studying the effects of bilingual education on the cognitive characteristics of students. These factors seem to explain the differences in the present study.
The study has shown no gains in the control groups over the experimental groups at the end of the experiment, which at least seems to indicate that bilingual education is not harmful to the children participating in the study in terms of achievement. This, nevertheless, does not lead to a general conclusion.

Conclusions and Recommendations

The effects of bilingual education on the cognitive characteristics of the Spanish-speaking children in Chicago Public Schools were explored in the present study. All the students participating in the study were pretested in Reading and Mathematics in the beginning of the experiment. The Comprehensive Tests of Basic Skills (CTBS), and the Bilingual Test Battery (BTB) were the measuring instruments. After the pretesting was completed, the experimental groups were taught bilingually (English and Spanish) for a period of eight months, while the control groups were taught monolingually (English) for the same period of time.

At the end of the experiment, the control and the experimental groups were posttested. The difference between the means of pre- and posttest scores was designed as gain. These gains were subjected to the One-Way Analysis of Variance to determine whether nonrandom variation existed in any of the comparisons. Those comparisons which showed
significant variation (a change reaching the .05 level numerically) were further analyzed by use of the t-test to enable specific comparisons of control and experimental groups to be made so that the scores of the variation could be pinpointed.

In accordance with the present study, objective research has disclosed that bilingual education is not a simple datum with consistent results of positive or negative effects, as writers with a speculative approach might be led to think. The present study, inconsistent and conflicting as the results are, points, nevertheless, to several valuable findings that need to be noted. These are:

1. In neither school was any negative effect of bilingual education registered.

2. The children in the experimental groups showed a gain in test scores equal or greater than those in the control groups.

3. No gain was noted in school one in the area of Reading.

4. Gains were noted in school two in the area of Reading in the third and fourth grades. The experimental groups had significantly higher scores than the control groups.

5. Gains are noted in school one in the area of Mathematics in the first grade. The experimental group had significantly higher scores than the control groups.

6. Gains were noted in school two in the area of Mathematics in the second, third and fourth grades. The experimental groups had significantly higher scores than the control groups.
7. There were noticeably more gains in the experimental groups of school two, in its first year of operation of a bilingual program, than in school one, in its second year of operation of a bilingual program.

8. The results of the study seem to indicate, even though not consistently, that the effects of bilingual education are positive.

9. The findings of the study support the theory that there is positive effect of bilingual education in six instances. Moreover, the findings show ten cases where there is neither positive nor negative effect of bilingual education.

Since the results of the study, as reported above, are not sufficiently in agreement with each other to lead to any conclusive generalization regarding the cognitive advantages of bilingual education, the following recommendations must be noted:

1. The present study suggests a trend in which there are more cases of positive effects in a school with less years of operation of a bilingual program. Recommendation: More studies should be pursued involving more than two schools, and schools operating bilingual programs for one, two, three, four, five, and more years to find out what the effects of bilingual education are in such circumstances.

2. A statement in each case of social, economic, educational, and, in particular, affective elements (racial, religious, or other inducements and animosities) attending bilingualism, their measurement, if possible, and the segregation of their effects in an experimental situation from the relation that bilingualism bears to mental development, is essential. Recommendation: Studies on the effects of bilingual education under different economic, educational, and affective elements must be pursued.
3. The review of previous work in the field of bilingual education indicates that the scientific study of bilingualism is merely at its beginning. Recommendation: A clear definition of bilingualism in each instance and an objective measurement of the same are necessary.

Studies on the effects of bilingual education are needed at the present time so that answers may be found to the questions of evaluation and program design, as well as the methodology and definition. The present study has been only exploratory and has not settled the question of whether the effects of bilingual education is beneficial or detrimental. With more studies on the matter, a solution can probably be found.


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APPENDIX A

Data Collection Forms
**TEST ADMINISTRATION INVENTORY**

Test administrator: Please fill out one copy of this form after each session of test administration.

<table>
<thead>
<tr>
<th>Date and time of testing</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Morning, afternoon, etc.):</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Group, size and structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>(No. of students, grade, etc.):</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Testing conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Room used and environmental conditions.):</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Persons administering test</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Proctors, teacher aides, etc.):</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Comments on discipline:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Specific problems if any:</th>
</tr>
</thead>
</table>

Name of test administrator: ___________________________ School: ______________

Group: (circle one)

<table>
<thead>
<tr>
<th>Program--Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: _______________</td>
</tr>
</tbody>
</table>

Name of Test: _______________

132
Teacher Questionnaire

This questionnaire has been designed to obtain some information about your background and your reactions to the Bilingual Center.

Please answer the questions as candidly as possible. All responses will be kept confidential. Your cooperation in providing this information is greatly appreciated.

Directions for making responses. For most questions you are to make responses by circling the appropriate letter or number.

FOR EXAMPLE:

What do you consider the greatest educational need of pupils at your center?

- Listening skills 1
- Writing skills 2
- Art experiences 3
- Math skills 4
- Reading skills 5
- More parent involvement 6
- Vocabulary 7

The above example indicates the respondent feels the greatest educational need is vocabulary.

Thank you for taking the time to give us this needed information.

Please return the questionnaire to:

Bilingual Unit
Division of Research and Evaluation
Department of Government Funded Programs
Room 1150 Mail Run # 65
BILINGUAL CENTER TEACHER QUESTIONNAIRE
FISCAL 1974

Bilingual Center Name ______________________ Unit #__ __ __ __
Area _______ District ________________ Date __ __/ __ __/74

Part I

1. Circle a number to indicate your response to the following question.

What is the funding source for your Bilingual Center

   Title VII 1
   State 2
   Title III 3
   EAA 4
   Board 5

(If you are not certain of the funding source, please check with your principal or office personnel who would have this information.)

2. How are you classified as a teacher?

   Regularly certificated 1
   FTB substitute 2
   Provisional 3

3. How long have you been engaged in full-time teaching experience in a school?

   Less than 1 year 1
   1 year, but less than 5 years 2
   3 years, but less than 6 years 3
   6 years, but less than 11 years 4
   11 years, but less than 20 years 5
   20 or more years 6
4. How many years have you been teaching in a bilingual education program?

   1 year, but less than 3 years  1
   3 years, but less than 6 years  2
   6 or more years  3

5. What grade level(s) are you teaching this year? Check any that apply.

   Prekindergarten
   Kindergarten
   Primary (Pl - Pz)
   Intermediate (IR - 6)
   Upper (7 - 8)
   High school

6. What is the extent of your college education?

   Bachelor's degree  1
   Bachelor's degree--plus some graduate credits  2
   Master's degree  3
   Master's degree --plus 36 hours  4
   Doctor's degree  5

7. What is your ethnic (cultural) background?

   Puerto Rican  1
   Mexican  2
   Cuban  3
   Other Latin American  4
   North American (USA)  5
The purpose of this questionnaire is to gather information which will help to improve the Chicago Bilingual Program. Each question has been translated to allow you to respond in the language you prefer.

Circle the number next to your response.

### BIRTH PLACE OF CHILD'S PARENTS

<table>
<thead>
<tr>
<th>Father</th>
<th>Mother</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cuba</td>
<td>Cuba</td>
</tr>
<tr>
<td>Mexico</td>
<td>Mexico</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>Puerto Rico</td>
</tr>
<tr>
<td>Southwest USA</td>
<td>Southwest USA</td>
</tr>
<tr>
<td>South America</td>
<td>South America</td>
</tr>
<tr>
<td>Other (specify)</td>
<td>Other (specify)</td>
</tr>
</tbody>
</table>

Place a check mark in the appropriate column to indicate your response.

<table>
<thead>
<tr>
<th>1. At home, what language is spoken most of the time?</th>
<th>SPANISH</th>
<th>ENGLISH</th>
<th>BOTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. What language do your children speak with you?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. What language do your children speak with one another?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. What language do your children speak with their friends?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. If you watch television, in what language are the programs?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. If your children watch television, in what language are the programs?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. If you work, what language do you speak?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
8. What is the number of courses you have completed in the following areas?

<table>
<thead>
<tr>
<th>Course</th>
<th>One</th>
<th>Two</th>
<th>Three</th>
<th>Four</th>
<th>Five or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methods of teaching reading</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Methods of teaching mathematics</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Diagnostic and remedial reading</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Teaching Spanish as a second language</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Teaching English as a second language</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Bilingual education</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

List other courses relevant to your teaching in the Bilingual Center activity.

9. What amount of time do you spend with the group sizes listed below?

Place a check in the box which indicates this amount of time most closely. For example, if you spend the morning with small groups of 6-10, and the afternoon with the total class of 27, then check the 1/2 (half-day) box to the right of 6-10 and the 1/2 box to the right of 26+.

<table>
<thead>
<tr>
<th>Group Size</th>
<th>Fractional Part Of A Day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1/4</td>
</tr>
<tr>
<td>1 pupil</td>
<td></td>
</tr>
<tr>
<td>2-5 pupils</td>
<td></td>
</tr>
<tr>
<td>6-10 pupils</td>
<td></td>
</tr>
<tr>
<td>11-18 pupils</td>
<td></td>
</tr>
<tr>
<td>19-25 pupils</td>
<td></td>
</tr>
<tr>
<td>26+ pupils</td>
<td></td>
</tr>
</tbody>
</table>
On the right hand side of each question, check the column under the word that best describes your response

1. How often do you attend parent meetings at the school?  
   | Rarely | Sometimes | Often |
2. How frequently do you volunteer to help at the school? 
   |         |           |       |
3. How often do you attend advisory council meetings? 
   |         |           |       |
4. Do you read the school newsletter? 
   |         |           |       |
5. How often has someone from the school visited your home? 
   |         |           |       |
6. Do you talk with your children about how the center can help them? 
   |         |           |       |
7. Do you visit the school to discuss your children's progress? 
   |         |           |       |

On the right hand side of each item, check the column under the word that tells how you feel toward the Bilingual Center Program.

1. The Bilingual Center tells me when there is anything I should know about my child.  
   | Agree | Undecided | Disagree |
2. The center keeps me informed about my children's school progress. 
   |       |           |         |
3. The teachers at the Bilingual Center should tell me how I can help my children. 
   |       |           |         |
4. The teachers at the center understand the way parents feel. 
   |       |           |         |
5. I think parents should have a more active place in the Bilingual Center Program. 
   |       |           |         |
6. Parental suggestions for changing and improving the activity are encouraged. 
   |       |           |         |
7. The school keeps the parents informed in general about activities of interest. 
   |       |           |         |
8. In general, my children like school better because they are at the center.

9. The school welcomes the help of the parents.

10. My children are making satisfactory progress since they started at the center.

11. The center gives me a chance to be involved in school activities.

12. I feel more comfortable at the center because there are people with whom I can speak in my native language.

13. More time should be spent on English language instruction.

14. The Bilingual Center should be open during the summer.

15. More non-Spanish-speaking pupils should be included in the center.

16. The center reflects and emphasizes our cultural background.

17. The classroom facilities are suitable for learning.

18. Parents have an active role in the preparation of the Bilingual Center proposal.
APPENDIX B

Checklist used during the Experiment for Verification of Bilingual and Monolingual Instruction
Checklist used during the Experiment for Verification of Bilingual and Monolingual Instruction

Rate according to the following equivalencies:

A = Maximum use
B = Good, average use
C = Minimum use
D = Not used at all

I. EXPERIMENTAL SCHOOLS
   A. Teachers are bilingual
   B. Teachers are bicultural
   C. Instruction is in English and in Spanish, roughly 50 percent in each language
   D. Student participation takes place in English and in Spanish, roughly 50 percent in each language
   E. Illustrations used in class include reference to the culture of Latin America, i.e., George Washington, but also Hidalgo y Costilla, Martí, Betances, etc.
   F. Student participation outside the classroom is bilingual, roughly 50 percent in each language
   G. Students speak the two languages at home by asking directly to teacher and individuals
   H. The classroom reflects a cultural environment of Latin America, i.e., on September 16, there is a Mexican flag, sketches on "El Grito," etc.
   I. Math and other subjects include parallel material as used in Latin America, i.e., the use of meters, kilometers, etc.

Name of School:____________________________
Date of visitation:________________________
Special Observations:
II. CONTROL SCHOOLS

A. Teachers are monolingual
   (English only)

B. Teachers are monocultural
   (English or Anglo only)

C. Instruction is in English only

D. Illustrations used in class are
   most of the time monocultural

E. Student participation takes place
   in English only

F. Student participation outside the
   classroom is entirely monolingual
   (English only)

G. Students speak one language at home
   (English only)

H. The classroom reflects a monocultural
   environment only

I. Math and other subjects exclude
   parallel material used in Latin America
   (generally speaking)

Name of School:__________________________

Date of visitation:_____________________

Special Observations:
APPENDIX C

Program Statistics and Staff Information
Program Statistics and Staff Information

All the program statistics and staff information has been obtained from the Office of the Administrator of Special Language Development Programs in the central office of the Chicago Board of Education. Student background information has been collected through a computerized checklist requesting each participant's name, identification number, place of birth, ethnic group, English-Spanish language proficiency, and years of membership in the bilingual program. (See Appendix A)

The information gathered covers questionnaires distributed during April, 1974, to 295 teachers and 48 administrators in ESEA Title VII and state-funded bilingual centers, including 8 teachers and 2 administrators in the two schools of this study, and 2,555 parents of children enrolled in these bilingual centers in the Chicago public schools. The questionnaires were returned between April and June 1974. The purpose of the questionnaires was to gather information relating to bilingual staff, program implementation, and staff and parental observations for use as a way of improving future program operations.

When information is gathered through a questionnaire, there are always two groups: those who choose to respond and those who do not. Where lack of response appeared significant in the following data, it was referred to; otherwise it was relegated to a parenthesis because the focus of the data was on the distribution of responses as informative data.

I. Teacher Questionnaire Responses

Questionnaires sent to 295 bilingual center teachers revealed the following information:

A. Source of Funding for Bilingual Teachers

The State of Illinois is the primary source of funding for Bilingual Teachers. The source of funding for the two schools participating in this study is as follows:

<table>
<thead>
<tr>
<th>Source</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>62.5%</td>
</tr>
<tr>
<td>Title VII</td>
<td>0.0%</td>
</tr>
<tr>
<td>Board</td>
<td>37.5%</td>
</tr>
<tr>
<td>Title III</td>
<td>0.0%</td>
</tr>
</tbody>
</table>
B. Qualifications and Training

1. Of the teachers, 65.5 percent were of Mexican, Puerto Rican, Cuban, or other Latin American ethnic background; 34.5 percent were of Anglo background; and 100 percent of the respondents had lived outside their native countries for at least two months. In the study, 87.5 percent were Latins and 12.5 percent Anglo.

2. Of the teachers, 25.1 percent had master's degree or a master's degree plus 36 hours of further study.

TABLE 16

LEVEL OF EDUCATION OF THE BILINGUAL CENTER TEACHERS IN THE WHOLE SYSTEM

<table>
<thead>
<tr>
<th>Level</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bachelor's plus some graduate credits</td>
<td>121</td>
<td>41.0</td>
</tr>
<tr>
<td>Bachelor's only</td>
<td>91</td>
<td>30.8</td>
</tr>
<tr>
<td>Master's only</td>
<td>62</td>
<td>21.0</td>
</tr>
<tr>
<td>Master's plus 36 hours</td>
<td>12</td>
<td>4.1</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Level</td>
<td>N</td>
<td>%</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Bachelor's plus some graduate credits</td>
<td>6</td>
<td>75</td>
</tr>
<tr>
<td>Bachelor's only</td>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>Master's only</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Master's plus 36 hours</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
3. Of the teachers questioned, 111, or 37.6 percent, had training in at least one course of the six areas polled, while 118, or 40 percent, had taken three or more courses. Fewer than 42 percent, however, had majored or minored in elementary school education.

The data suggest that the greatest areas of weakness lie in the lack of training specifically for bilingual education or in diagnostic and remedial reading. Only 89, or 30.1 percent, of the teachers had one or more courses in bilingual education. However, 196, or 66.4 percent, of the teachers made no response to this subcategory.

C. Classroom Dynamics

1. Group size varied from 1 to 26 or more pupils.

2. Of the teachers, 67, or 22.7 percent, spent all day with their group of 6 to 26 or more pupils, while 76.8 percent spent at least a half-day with their group. An average percentage of 72.2 teachers made no response to this item on the questionnaire. (See Table 18.)

3. Pupils in the centers were distributed about equally in three linguistic categories. (See Tables 19 and 20.)
TABLE 18

PERCENTAGE OF TIME PER GROUP SIZE

<table>
<thead>
<tr>
<th>Group Size</th>
<th>1/4 N</th>
<th>1/4 %</th>
<th>1/2 N</th>
<th>1/2 %</th>
<th>3/4 N</th>
<th>3/4 %</th>
<th>All N</th>
<th>All %</th>
<th>N.R. N</th>
<th>N.R. %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 pupil</td>
<td>16</td>
<td>5.4</td>
<td>1</td>
<td>0.3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td>278</td>
<td>94.2</td>
</tr>
<tr>
<td>2-5 pupils</td>
<td>29</td>
<td>9.8</td>
<td>8</td>
<td>2.7</td>
<td>3</td>
<td>1.0</td>
<td>0</td>
<td></td>
<td>225</td>
<td>86.4</td>
</tr>
<tr>
<td>6-10 pupils</td>
<td>33</td>
<td>11.2</td>
<td>52</td>
<td>17.6</td>
<td>10</td>
<td>3.4</td>
<td>6</td>
<td>2.0</td>
<td>194</td>
<td>65.8</td>
</tr>
<tr>
<td>11-18 pupils</td>
<td>25</td>
<td>8.5</td>
<td>56</td>
<td>19.0</td>
<td>14</td>
<td>4.7</td>
<td>14</td>
<td>4.7</td>
<td>186</td>
<td>63.1</td>
</tr>
<tr>
<td>19-25 pupils</td>
<td>21</td>
<td>7.1</td>
<td>50</td>
<td>16.9</td>
<td>4</td>
<td>1.4</td>
<td>22</td>
<td>7.5</td>
<td>198</td>
<td>67.1</td>
</tr>
<tr>
<td>26 plus pupils</td>
<td>29</td>
<td>9.8</td>
<td>60</td>
<td>20.3</td>
<td>13</td>
<td>4.4</td>
<td>25</td>
<td>8.5</td>
<td>168</td>
<td>56.9</td>
</tr>
</tbody>
</table>
### TABLE 19

**NUMBER OF TEACHERS PER LINGUISTIC CATEGORY FOR THE WHOLE SYSTEM**

<table>
<thead>
<tr>
<th>Linguistic Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish-dominant</td>
<td>243</td>
</tr>
<tr>
<td>Bilingual</td>
<td>226</td>
</tr>
<tr>
<td>English-dominant</td>
<td>184</td>
</tr>
</tbody>
</table>

### TABLE 20

**NUMBER OF TEACHERS PER LINGUISTIC CATEGORY IN THE STUDY**

<table>
<thead>
<tr>
<th>Linguistic Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish dominant</td>
<td>7</td>
</tr>
<tr>
<td>Bilingual</td>
<td>8</td>
</tr>
<tr>
<td>English-dominant</td>
<td>1</td>
</tr>
</tbody>
</table>
D. Supervision, Inservice Training and Teacher Satisfaction

1. Of the teachers, 214, or 72.5 percent, identified a person responsible for directing the activity in the school, while 73 teachers, or 24.7 percent, did not answer this item.

The principal was identified in most bilingual center schools as the person responsible for direction of the program activities.

2. Responsibility for direction was divided, as shown in Figure 21.

3. A mean percent of 31.8 of the respondents viewed the inservice topics as presented in the next questionnaire, as very helpful or adequate in defining center needs, etc., while an average of 19.4 percent of the respondents felt that the topics did not cover areas of need.

<table>
<thead>
<tr>
<th>PERSON RESPONSIBLE FOR DIRECTING ACTIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Person Responsible</strong></td>
</tr>
<tr>
<td>Principal</td>
</tr>
<tr>
<td>Teacher</td>
</tr>
<tr>
<td>Assistant Principal</td>
</tr>
<tr>
<td>Lead Teacher</td>
</tr>
</tbody>
</table>
II. Administrator Questionnaire Responses

A questionnaire mailed to 50 bilingual center administrators, and of whom 48 responded, yielded the following information:

A. Center Dynamics

1. Reason for Establishment

<table>
<thead>
<tr>
<th>Reason</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local needs</td>
<td>85.4</td>
</tr>
<tr>
<td>Community request</td>
<td>60.4</td>
</tr>
<tr>
<td>Staff suggestion</td>
<td>45.8</td>
</tr>
<tr>
<td>Continued from previous year</td>
<td>41.7</td>
</tr>
<tr>
<td>School council request</td>
<td>41.7</td>
</tr>
<tr>
<td>Test results</td>
<td>37.5</td>
</tr>
<tr>
<td>Area suggestion</td>
<td>8.3</td>
</tr>
<tr>
<td>District request</td>
<td>6.3</td>
</tr>
</tbody>
</table>
### Table 23

**Ranking by Administrators of Staff's Special Training**

<table>
<thead>
<tr>
<th>Special Training</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilingual Education</td>
<td>60.4</td>
</tr>
<tr>
<td>Reading</td>
<td>43.8</td>
</tr>
<tr>
<td>Teaching English</td>
<td>37.5</td>
</tr>
<tr>
<td>Mathematics</td>
<td>33.3</td>
</tr>
<tr>
<td>Guidance</td>
<td>29.2</td>
</tr>
</tbody>
</table>
Of the administrators, 85.4 percent agreed that local need was the chief reason for requesting a center. Next was community desire, followed by staff suggestion. Area and/or district request were minor determining factors. Most centers were implemented because of a need and because the community asked for a bilingual approach to education.

2. Start of Program

Of the administrators, 83.3 percent indicated that their center classes began in September 1973. Two centers began classes in October and one in November 1973. (Five administrators, or 10.4 percent of the respondents failed to answer this item). Of the administrators, 12, or 25 percent listed late arrival of materials as the primary cause for delay in center implementation and lack of staff as the second most important cause. Delayed approval of funding and delayed arrival of equipment are rated as the third and fourth causes. Only two administrators rated lack of facilities as contributing to the delay, while five listed a need for inservice training.

3. Responsibility

Over one-third, or 33.3 percent of the administration listed themselves as coordinators of the bilingual activities. The team teachers were second and bilingual coordinators third. Thirteen administrators failed to answer this item.

4. Center Staff

Twenty-one administrators had some teachers with less than a year of experience, but most of the centers were staffed with teachers having one to ten years of experience. A few centers had staff with up to 20 years of experience. Of the administrators, 60 percent reported staff with special training beyond board requirements in bilingual education and other subjects.
B. Procedure Issues

Of the responding administrators, 68.8 percent held inservice sessions separate from, and in addition to, regular school inservice sessions. An almost equal percentage of administrators, 66.7 percent, were satisfied with the bilingual objectives as defined. Figure 24 shows that most administrators rated prompt delivery of teaching materials and inservice training, prior to the opening of the school, as the most desirable procedural change.

III. Parent Questionnaire Responses

A questionnaire was sent to 2,555 parents of children enrolled in bilingual centers. The questionnaire was in English, with each item translated into Spanish to allow the parents to respond in the language of their preference. The results revealed the following information.

A. Ethnic Background

Although 516 of the parents made no response to this item, of those answering, 1,812, or 70.7 percent, of the fathers gave Mexico or Puerto Rico as their place of birth. A slightly lower number of mothers, 1,741, or 68.2 percent, had also been born in Mexico or Puerto Rico. Fewer than four percent of the fathers and the mothers had been in Cuba or in South American countries. An additional 5 percent had been born in the southwest of the United States.

The questionnaire showed that while the parents' language in the home was predominantly Spanish, English was their predominant language outside the home and the predominant language of their television programs. On the other hand, the children used Spanish predominantly when speaking with their parents, but used English or both languages in most other areas of conversation. The television programs most watched were in English.
### TABLE 24
PERCENTAGE OF PRINCIPALS DESIRING PROCEDURAL CHANGES

<table>
<thead>
<tr>
<th>Procedural Changes</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prompt delivery of materials</td>
<td>77.1</td>
</tr>
<tr>
<td>Preservice prior to school opening</td>
<td>64.6</td>
</tr>
<tr>
<td>Earlier funding</td>
<td>60.4</td>
</tr>
<tr>
<td>Earlier testing of students</td>
<td>39.6</td>
</tr>
<tr>
<td>Modification in selecting staff</td>
<td>33.3</td>
</tr>
</tbody>
</table>

### TABLE 25
PERCENTAGES OF PARENTS AND LANGUAGE USED

<table>
<thead>
<tr>
<th>Language</th>
<th>In Home</th>
<th>At Work</th>
<th>With Child</th>
<th>Parents and TV</th>
<th>Child Child</th>
<th>Child Friend</th>
<th>Child and TV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanish</td>
<td>60.8</td>
<td>57.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>39.3</td>
<td></td>
<td>53.9</td>
<td>38.5</td>
<td>47.0</td>
<td>68.4</td>
<td></td>
</tr>
<tr>
<td>Bilingual</td>
<td></td>
<td>32.6</td>
<td>33.1</td>
<td>35.1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percentages below 30.0 are not included.
B. Interaction with the Bilingual Center

Slightly over one-third of the parents reported that they visited the center often to discuss their children's progress with teachers, but 60.2 percent rarely received a visit from the center, and only 6.4 percent of the parents reported being visited frequently by the school. Over half the parents, or 57.8 percent reported that they rarely volunteered to help at the center, supporting the earlier view by teachers of lack of motivation to become involved. However, the parents were interested in the progress of their children because 35.3 percent of them often talked with their children about how the center can help the child, and another 32.3 percent reported that they sometimes discussed the center with their children.

TABLE 26

PERCENTAGE OF PARENTS INITIATING ACTIVITY

<table>
<thead>
<tr>
<th>Activity</th>
<th>% Rarely</th>
<th>% Sometimes</th>
<th>% Often</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attends meeting (parent)</td>
<td>39.6</td>
<td>37.7</td>
<td></td>
</tr>
<tr>
<td>Attends meeting (council)</td>
<td>45.0</td>
<td>29.2</td>
<td></td>
</tr>
<tr>
<td>Visits the center</td>
<td>51.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reads newsletter</td>
<td>28.3</td>
<td>29.1</td>
<td></td>
</tr>
<tr>
<td>Discusses school with child</td>
<td>32.0</td>
<td>35.3</td>
<td></td>
</tr>
<tr>
<td>Received visit from school</td>
<td>60.3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Only the significant percentages in each category have been listed in this table.
C. Parental Attitudes and Feelings

Parents' responses to items dealing with the amount of feedback given parents by the centers and with parents' desires for the improvement of center functionings is found in Appendix A.

Two-thirds to three-quarters of the parents responding agreed with all the categories probed, except for the one dealing with their role in helping prepare the bilingual center proposals. In this category, only 47.4 percent felt that their role was active enough. Also, 78.8 percent of the parents felt that the teachers in the centers should help them learn how to help their children.
APPENDIX D

Approximate Population Totals: August, 1973, Spanish Speakers in the Western Hemisphere Compared to Non-Hispanic Population of the U.S. and Canada (in millions)
Approximate Population Totals: August, 1973, Spanish Speakers in the Western Hemisphere Compared to Non-Hispanic Population of the U.S. and Canada (in millions)

<table>
<thead>
<tr>
<th>Description</th>
<th>Estimate (in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated population of United States</td>
<td>210.3</td>
</tr>
<tr>
<td>Estimated population of Canada</td>
<td>22.5</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>232.8</strong></td>
</tr>
<tr>
<td>Estimated Spanish Speaking population in U.S.</td>
<td><strong>-12.5</strong></td>
</tr>
<tr>
<td><strong>Subtotal, Non-Hispanic U.S. and Canada</strong></td>
<td><strong>220.5</strong></td>
</tr>
<tr>
<td>Estimated population of 18 Spanish Speaking countries and Puerto Rico</td>
<td>194.6</td>
</tr>
<tr>
<td>Spanish Speaking population of the U.S.</td>
<td></td>
</tr>
<tr>
<td>Approximate Total Spanish Speakers in the Western Hemisphere</td>
<td>207.1</td>
</tr>
<tr>
<td><strong>APPROXIMATE DIFFERENCE</strong>--Between Spanish Speakers and English Speakers in Western Hemisphere in 1973*</td>
<td><strong>13.2</strong></td>
</tr>
</tbody>
</table>


*Differences in 1971 and 1972 were 21,900,000 and 19,000,000, respectively.
APPENDIX E

Population and Growth Rates of the Largest Spanish Speaking Countries of the Western Hemisphere and Spanish Speaking Population of the United States (in millions)
### Population and Growth Rates of the Largest Spanish Speaking Countries of the Western Hemisphere and Spanish Speaking Population of the United States (in millions)

<table>
<thead>
<tr>
<th>Country</th>
<th>1973 Population</th>
<th>Percent Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mexico</td>
<td>56.2</td>
<td>3.3</td>
</tr>
<tr>
<td>Argentina</td>
<td>25.3</td>
<td>1.5</td>
</tr>
<tr>
<td>Colombia</td>
<td>23.7</td>
<td>3.4</td>
</tr>
<tr>
<td>Peru</td>
<td>14.9</td>
<td>3.1</td>
</tr>
<tr>
<td>United States</td>
<td>12.5*</td>
<td>N/A</td>
</tr>
<tr>
<td>Venezuela</td>
<td>11.9</td>
<td>3.4</td>
</tr>
<tr>
<td>Chile</td>
<td>10.4</td>
<td>1.7</td>
</tr>
<tr>
<td>Cuba</td>
<td>8.9</td>
<td>1.9</td>
</tr>
<tr>
<td>Ecuador</td>
<td>6.7</td>
<td>3.4</td>
</tr>
<tr>
<td>Guatemala</td>
<td>5.6</td>
<td>2.6</td>
</tr>
</tbody>
</table>

APPENDIX F

Numerical Decrease or Increase in the Student Population in the Chicago Public School in 1973 and 1974
## Numerical Decrease or Increase in the Student Population in the Chicago Public School in 1973 and 1974

<table>
<thead>
<tr>
<th>Category</th>
<th>1973</th>
<th>1974</th>
<th>Difference in No. of Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian &amp; Other</td>
<td>160,846</td>
<td>151,209</td>
<td>-9,556</td>
</tr>
<tr>
<td>Black</td>
<td>314,089</td>
<td>310,880</td>
<td>-3,209</td>
</tr>
<tr>
<td>American Indian</td>
<td>1,042</td>
<td>977</td>
<td>-65</td>
</tr>
<tr>
<td>Asian American</td>
<td>5,264</td>
<td>5,558</td>
<td>+294</td>
</tr>
<tr>
<td>Spanish Surnamed Americans</td>
<td>(63,730)(11.7)</td>
<td>(67,952)(12.7)</td>
<td>+4,222</td>
</tr>
<tr>
<td>Mexican Origin</td>
<td>28,249</td>
<td>30,520</td>
<td>+2,271</td>
</tr>
<tr>
<td>Puerto Rican Origin</td>
<td>29,022</td>
<td>31,080</td>
<td>+2,058</td>
</tr>
<tr>
<td>Cuban Origin</td>
<td>2,792</td>
<td>2,572</td>
<td>-220</td>
</tr>
<tr>
<td>Other Spanish Surnamed Americans</td>
<td>3,667</td>
<td>3,780</td>
<td>+113</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>544,971</td>
<td>536,657</td>
<td>-8,314</td>
</tr>
</tbody>
</table>
APPROVAL SHEET

The dissertation submitted by Ramon L. Merlos has been read and approved by the following committee:

Dr. Barney Berlin, Director
Chairman, Curriculum and Instruction, Loyola

Dr. Gwendolyn Trotter
Assistant Professor, Curriculum, Loyola

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Dr. John McCann
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The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Date: April 13, 1978
Director's Signature