A comparison of Puerto Rican children's performance on the Spanish version of the Wechsler Intelligence Scale for Children-Revised (WISC-R) and the Kaufman Assessment Battery for Children (K-ABC).

Cesar D. Vazquez
University of Massachusetts Amherst

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A COMPARISON OF PUERTO RICAN CHILDREN'S PERFORMANCE ON THE SPANISH VERSION OF THE WECHSLER INTELLIGENCE SCALE FOR CHILDREN-REVISED (WISC-R) AND THE KAUFMAN ASSESSMENT BATTERY FOR CHILDREN (K-ABC)

A Dissertation Presented

by

CESAR D. VAZQUEZ

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A COMPARISON OF PUERTO RICAN CHILDREN'S PERFORMANCE ON THE SPANISH VERSION OF THE WECHSLER INTELLIGENCE TEST FOR CHILDREN-REVISED (WISC-R) AND THE KAUFMAN ASSESSMENT BATTERY FOR CHILDREN (K-ABC)

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CESAR D. VAZQUEZ

Approved as to style and content by:

Ronald H. Fredrickson, Chairperson of Committee

Ena V. Nuttall, Member

Theodore Slovin, Member

Marilyn Haring-Hidore
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I would like to take this opportunity to thank all the people that helped me in this process. I would like to start with my parents, sister, grandparents, aunts and uncle without whose support, love, encouragement and care I would not have been able to make it.

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A COMPARISON OF PUERTO RICAN CHILDREN'S PERFORMANCE ON THE SPANISH VERSION OF THE WECHSLER INTELLIGENCE TEST FOR CHILDREN-REVISED (WISC-R) AND THE KAUFMAN ASSESSMENT BATTERY FOR CHILDREN (K-ABC)

FEBRUARY 1989

CESAR D. VAZQUEZ, B.A., UNIVERSITY OF PUERTO RICO
M.Ed., UNIVERSITY OF PUERTO RICO
Ed.D., UNIVERSITY OF MASSACHUSETTS

Directed by: Professor Ronald H. Fredrickson

It is very difficult to determine whether a standardized test developed in one country can be used successfully in another. Factors such as differences in language, culture, norms and other factors can affect the test results. The main objective of this dissertation was to determine whether there was a difference between the performance of second grade, Puerto Rican students on the Escala de Inteligencia Wechsler para Niños and the Kaufman Assessment Battery for Children in Spanish.

The sample used in this research study consisted of thirty (30) second graders from a town in the Southwest of Puerto Rico. The sample consisted of 17 males and 13 females, between the ages of 7.00 to 9.00 years old. The sample was randomly selected from a total of 123 second grade students from the school. The students were administered using a counter balanced order the Escala de Inteligencia Wechsler para Niños and the Kaufman Assessment Battery for Children.
According to the research findings it can be concluded that the Kaufman Assessment Battery for Children in Spanish can be used very effectively in assessing Puerto Rican children in Puerto Rico since it correlates positively with the Escala de Inteligencia Wechsler para Niños which is one of the most used instruments to measure intelligence on the island.

It can also be concluded that the Kaufman Assessment Battery for Children is as good as the Escala de Inteligencia Wechsler para Niños Revisada in predicting school achievement as measured by the teachers' estimate of performance. We can conclude, based upon the reported findings that we can consider the use of the Kaufman Assessment Battery for Children in Spanish when we assess Puerto Rican children in Puerto Rico. Comparatively speaking, the Kaufman Assessment Battery for Children appears to be a valid and reliable instrument to measure intelligence.
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CHAPTER I
INTRODUCTION

There has been a widespread use of educational and psychological tests in the United States since World War I. Tests have been developed to measure mental ability, aptitude, attitudes, skills mastery, achievement, career interests, career maturity, personality, and other areas.

In the United States most students are exposed to both individual and group testing frequently. Educational systems use tests for various reasons, among them the most important, to help teachers and other professionals detect which students are in need of special help and those who are not. Tests are also used to determine in what ways these students can be helped.

In this type of educational system, tests seem to play a very important role. Based on the cumulative performance of each individual, school placement is determined. If the students' performance is like those of the mean of their peers, they will remain on their grade level; if their performance is above that of the peers, they might be placed on an advanced or accelerated group. If their performance is below that of the peers, they might receive additional help in the areas of need or be placed in classes according to the needs.

In a nation as large and diverse as the United States, the assessment of children in schools is not an easy task.
There are children who speak different languages and that are from a multitude of different cultural backgrounds. All of these children regardless of their primary language or cultural background, are expected to successfully comply with the requirements of the schools in which they are enrolled. This situation creates many problems.

If all children regardless of their cultural heritage and or language are expected to perform as well as the children from the majority culture on the standardized tests, to be identified as having or not having the potential to learn, it is then important that we take other variables that may be affecting these results into consideration. It is important to determine whether the test results of the children that are from different cultures or speak a different language are a true representation of the skills or constructs that we intend to measure or are they a mere measure of their adjustment or non adjustment to the new culture. This is a very important issue which can change the direction of assessment of language minorities and of minorities in general.

There has been a nationwide concern about the over-representation of minority children, especially Blacks and Hispanics in the classes for the mentally retarded. Jane Mercer (1973) in California became very interested in this problem. She found that the tests used to evaluate these children were constructed and validated using white middle
class values. She points out that maybe one possible explanation might be that:

"When public schools were established, they perpetuated the Anglo-Saxon model. The goal of public education was to Americanize the children of immigrants and to wean them from the language and culture of their parents. All instruction was in English and only the Anglo-Saxon traditions, institutions, values and history were taught. Thus the implicit goal of public education was to produce monolingual, mono-cultural, and anglicized children and to allow non-anglo cultural traditions to die. All current standardized tests are designed to predict which children are likely to succeed in the public schools. Thus the values of Anglicization are implicit in standardized tests geared to the public schools. As a consequence of the assumption that cultural homogeneity is the societal model in America, current testing procedures have the following characteristics: all standardized tests regularly used in the public schools are written in English and the test content is culturally specific to Anglo culture. A single normative framework is used to judge the quality of performance. All children are compared with the children of the Anglo majority, and tests are interpreted against the assumption that all children are or ought to be Anglicized."

(p.156)

Since all children are supposed to meet the criteria established by the standardized tests, children that have not been exposed to the same type of educational experiences as those in the normed group will not be able to perform as well. This situation is even worse for Hispanic children tested in the United States, who besides not sharing a common culture with the norm group speak a different language. These two major differences can hinder the results they obtain in any standardized test.
The United States is one of the world leaders in the development of tests, it can be assumed that its tests are used in different languages and in different countries. Test companies are well aware of the problems associated with the assessment of language minorities in the United States and the use of its products in other countries where both language and culture can be different. There are many problems associated with the use of tests developed in one country and then exported to another. Among them the most important are culture and language, which are the expression of that culture.

Zirkel (1972), reviewed the literature on Spanish speaking students and standardized tests. He found that the language of the IQ tests significantly affects results for the Spanish speaking children. One alternative in the assessment of Spanish speaking children is the translation of existing tests into Spanish. Roca (1951) translated into Spanish and normed the Wechler Intelligence Scale for Children (WISC) in Puerto Rico. This translation is used in Puerto Rico and in the United States with children who are Spanish dominant.

Abel (1973), points out in his book, *Psychological Testing in Cultural Contexts*, that the translation of any test into Spanish is useful but that sometimes the questions are not relevant to the experiences of the clients in which the tests are used. A good example of this is the Spanish translation of the WISC. It includes a question related to
the advantages of paying with checks. However, some of the children tested have never seen or used a check. The cultural differences come to play a very important part where the subjects cannot answer correctly not because they do not have the ability to analyze or understand what is being asked but because they have never been exposed to that cultural pattern. Then what they lack is a mastery of a different culture rather than the ability to think.

Brislin, Lonver and Thorndike in their book, *Cross Cultural Research Methods* (1973), also discuss the effects of translating tests into Spanish:

"Assuming that the test must be translated and the norms comparable to those used in its originating culture will be used, translation is the single most important part of the adaptation process. Any verbal device and even nonverbal tests are not absolutely free from translation problems."

They warn of the dangers involved in the translation of the tests. They strongly oppose the use of simple literal translations. Since language is closely associated with culture, we must also take culture into consideration if we want to produce an equivalent form of a test. Some examiners, in their effort to test their clients in their native language, decide to do their own translations of the tests most widely used with majority children. They make important mistakes when they use the norms of the original tests to interpret the results of their own translation. Since this translation is not an equivalent form of the original
test its norms are not applicable. This would be a different test that needs new norms.

They also warn against the use of various tests with language minority children because the mere fact that they are frequently used with majority children does not mean that they will be useful with clients from different cultures. It is very important to notice that because some tests are widely used within the majority culture, that does not necessarily mean that it can be used with a person from a different culture. Brislin, et al conclude that when we assess a person from a different culture we must make a very good analysis of the tests we propose to use to determine whether it can be used to assess the skills or constructs we intend, or if the cultural background of the client would be such that this test would be useless to measure their skills.

In 1975, Cruz, Hernihar, Quesada and Zirkel, in a paper presented at the annual meeting of the National Council of Measurement in Education, reported that relatively minimal efforts have been expended to evaluate and optimize the use of Spanish as a means of testing as well as for teaching Spanish speaking children in the United States. They also suggest that the language of the standardized test significantly affects the results of Spanish speaking students, particularly in the early grades and for language laden sub-tests. They encourage the use of Spanish in the testing of Spanish speaking children.
It is also very important to understand that the mere translation of a test into Spanish will not make it universal for all Spanish speaking students both in the United States and in other countries where Spanish is the main language. De Avila (1976) in his article, Mainstreaming Ethnically and Linguistically Different Children: An exercise in Paradox or a New Approach, discusses the important role of translation on testing. He states that it is virtually impossible to use a single translation across different geographic locations in the United States because there are significant differences in dialects and regional variations on the language. It becomes virtually impossible to anticipate which word should be used with each subgroup. This is not the only problem associated with the translation of tests, although the same word may be common to two regions of the country, it may have radically different meanings in each region. He also points out another danger in translating tests:

"Straightforward or literal translations of existing tests represent a complete denial of cultural differences. In many cases this leads not only to unfair tests but to tests which require children to break from their own cultural traditions."

(P.94)

De Avila agrees with Brislin, Loriner and Thorndike (1973) in that the cultural aspects of the test translation process are as important or more important than the translation itself. In the testing situation differences in culture can be misinterpreted and this misinterpretation might
affect the test results. The child's culture can affect the testing situation not only on the answers that they give but also in the approach they use to find solutions to the problems presented. A good example on how culture can affect the testing situation is the concept of time. If a child is not encouraged to compete and to solve a task as quickly as he can, but on the other hand is encouraged to work together with others rather than to compete he then will have difficulty working as quickly as he can on the tasks that require speed or in those where extra points are gained with speed.

Olmedo, in 1977, in his article Psychology Testing and the Chicano: A Reassessment, concludes that:

"A related issue for the Chicanos is the translation of existing intelligence tests into Spanish. The current evidence indicates that this approach has not been successful because of translation problems, differences between the Spanish spoken at home or the community, and the Spanish used in tests and the fact that the test content remains culture bound."

(P. 183)

He points out that that we should also take into consideration when we use translations that the Spanish that we use in the test is probably not the same that the child uses at home or in the community. This is a very important factor that can affect test results. If the child is not familiarized with the formal language that we use in testing this can seriously hinder its results. The children will not understand what is being asked to do or will not answer according to the expected answers and their score will be lower than their potential.
Even though we agree that there are many disadvantages in the use of translations of intelligence tests we also have to agree that most countries do not have the money or resources to develop their own tests. In view of this reality it is our responsibility to make sure that when these translations are used in those countries or with children from different countries the psychologists who use them should be aware of tests limitations.

The purpose of this research project was to compare the performance of second grade non referred Puerto Rican children on the Spanish version of the Wechsler Intelligence Test for Children-Revised (WISC-R) and the Kaufman Assessment Battery for Children (K-ABC). The WISC-R is the most widely used individually administered test of intellectual functioning in the United States, (Sandoval and Millie, 1980). In Puerto Rico the most widely used is the Escala de Inteligencia Wechsler para Niños (EIWN) which was translated and normed in Puerto Rico in 1951. The WISC-R was recently translated into Spanish in Miami, Florida by Cuban psychologists and it is beginning to be used in Puerto Rico. Norms are being collected. Numerous research projects have studied the validity of using these tests with Puerto Rican children both on the mainland and on the island.

The Kaufman Assessment Battery for Children (K-ABC) was published in 1983, by Alan and Nadeen Kaufman. The K-ABC is a test of intelligence and achievement of children ages 2 1/2 to 12 1/2. The K-ABC is designed to measure two
types of intelligence that have been identified by researchers in neuropsychology and cognitive psychology (Kaufman & Kaufman, 1984). It measures intelligence in terms of the individual's style of processing information and solving problems. The role of language ability has been minimized deliberately so that problem-solving ability can be assessed more clearly.

If the role of language has been minimized deliberately so that problem-solving ability can be better assessed then it can be assumed that it will be more useful in assessing bilingual children and children whose primary language is not English. Since language usage has been reduced then the issues associated with translation to other languages are reduced also. The purpose of this study is to investigate the relative effectiveness of the K-ABC and the EWIN-R (WISC-R) in assessing Puerto Rican children in Spanish.
There has been a wide range of research on the issues of bias in the assessment of language minorities and on the use of intelligence tests in other countries. The findings are varied and challenging to psychologists. In this section the most significant research in the area of assessment of Puerto Rican children in the United States and in Puerto Rico will be summarized. Research done comparing the WISC-R and the K-ABC will also be presented.

Wechsler revised the Wechsler Intelligence Test for Children (WISC) in 1974 and published it as the Wechsler Intelligence Test for Children Revised (WISC-R). One of the major changes in the WISC-R was:

"the modification or elimination of items felt by some test users to be ambiguous, obsolete, or differentially unfair to particular groups of children."

(Wechsler, 1974, P.10)

The objective was to make the WISC-R fairer for blacks and other minorities. Sandoval in 1979 examined the evidence of cultural bias for Anglo-American, black, and Mexican-American children. He measured the performance of the children on internal criteria of reliability and a number of order-of-item-difficulty measures was assessed. He found that the children in the minority sample performed in the test in the same general fashion as the majority children. He also reported that there was no clear pattern to the items on the
test that were more difficult for minority children. He concluded that the WISC-R appears to be nonbiased for minority group children.

Munford, Meyerowitz and Munford, (1980) compared the performance of black and white children on the WISC and the WISC-R. They used a sample of 20 black and 20 white outpatient psychiatric patients. They used a counterbalanced design. They reported that for the white sample there was no difference between the scores obtained in the WISC and those of the WISC-R, in the Verbal, Performance or Full Scale IQ. Black children on the contrary scored significantly lower on the WISC-R than on the WISC on all three measures of IQ. According to Munford, Meyerowitz and Munford when black children are being assessed the WISC should be used rather than the WISC-R. However there are some limitations in this study that need to be addressed.

The sample used in this study was not equivalent to the population of the WISC-R. The standardization sample as described in the WISC-R sample clearly indicates that it was limited to "normal" children. In order to further understand the effects of using the WISC-R with minority children Sandoval and Miille (1980) contrasted two methods of determining test bias: empirical (quantitative) evidence and rational (subjective) judgment. They used a sample of 100 college students to judge 30 items from the Wechsler Intelligence Scale for Children (WISC-R). These items were generated from a multivariate analysis of variance by
Sandoval (1979) on Mercer and Lewis's (1979) WISC-R data. Subjects were to evaluate the relative difficulty of items for a child from a black or Mexican-American background as compared with an Anglo-American child. The results indicate that the judges were unable to determine accurately which items were more difficult for minority students. There was no significant difference in accuracy for judges of different ethnic backgrounds. Based on these findings they suggest we should not use judges to determine which items are biased on a test. However a limitation of this study is that the judges used in were not experts in the measurement of intelligence.

The Wechsler Intelligence Scale for Children (WISC) was translated into Spanish in Puerto Rico by Dr. Roca in 1951. There was a major problem with the norms developed in 1951, the distribution curve of IQ's on the Puerto Rican population was not exactly a normal one. The Puerto Rican WISC mean IQ is 88.01 and the standard deviation is 21.60. The WISC norms as established by Wechsler are 100 for the mean and 15 for the standard deviation. It is very important to keep in mind these differences in order to interpret the scores.

Dr. Roberto Moran in 1974 recommended that the norms for the WISC should be revised to include a more representative sample. He also proposed a mathematical formula to convert WISC IQ scores from the Puerto Rican sample to
the WISC IQ scores in the mainland to facilitate the understanding of these scores.

Following Dr. Moran's recommendation that new norms be developed for Puerto Rican children with the WISC, Dr. Joseph Prewitt-Diaz and Gaisel Muñoz (1984) collected new norms. The sample they used in their study consisted of 100 Puerto Rican pupils from the southern part of the island. They were from grades K – 9th., 10 pupils from each grade in three elementary schools and three junior high schools. The 100 were equally divided between boys and girls and were between 5 and 15 years old. They reported that none of the children had ever been referred for special education and they assumed that because of this fact they were of normal intelligence and learning ability for their age.

They reported a mean score of 109.9 and a standard deviation of 14.56. These findings are closer to the Wechsler scores than Roca's. There are several problems with their research. They did not report how the sample location was chosen, (southern vs northern), and the exact location of the schools. They also failed to indicate if the schools were public or private or the socioeconomic status level of the children tested.

I think that their sample is as limited as the one used by Roca in 1955 and that further research should be conducted to establish more representative norms for the assessment of Puerto Rican children. I would also suggest that
instead of using the WISC, Puerto Rican norms should be developed for the WISC-R and the K-ABC which are newer tests.

In 1986 Prewitt-Diaz, María Rodriguez and David Rivera-Ruiz studied if the Spanish translation of the WISC-R (EWIN-R) was a reliable instrument with Puerto Rican students in Puerto Rico and the United States. In their study they administered the EWIN-R to 51 children ages 10.5 to 13.1 years old, 23 males and 28 females from a town in the Central Mountain Region of Puerto Rico. They reported a Full Scale IQ mean of 91.8 with a standard deviation of 14.5. Alpha reliability coefficients were calculated for all Verbal and Performance subtests, these coefficients ranged from .53 for Arithmetic to .80 for Vocabulary.

Their second study was conducted in Connecticut to determine the reliability and predictive validity with a group of Puerto Rican adolescents. The sample consisted of 80 recent arrival Puerto Rican students ages 12.4 to 14.0, 40 males and 40 females.

They reported the following results Full Scale IQ mean of 85.2 and a standard deviation of 15.9. Alpha coefficients of reliability were calculated for the Verbal and Performance subtests they ranged from .55 for Comprehension to .79 for Vocabulary.

They suggest in their results that the EWIN-R is a reliable and valid measure when used with a group of children in Puerto Rico and adolescents in the United States. They also suggest that further studies should be conducted to de-
termine the cultural appropriateness of various items in the Verbal Scale.

The studies conducted by Prewitt-Diaz et al., are very important since they are one of the first efforts to study the reliability of the EWIN-R with a Puerto Rican population both on the island and the mainland. In both of these studies the authors failed to report who administered the tests and how were the students selected for the study. They did not report if the students were in special classes or had been referred for such. With the Connecticut group they did not include information on the school placement of the children whether they were enrolled in a bilingual program or not. They also failed to include information about how these two locations were chosen. All of this information is important to determine the reliability of the EWIN-R with a Puerto Rican population.

Kaufman Assessment Battery for Children Studies:

The Kaufman Assessment Battery for Children (K-ABC), (1983) is a new individual test of intelligence and achievement and is designed for children ages 2 1/2 to 12 1/2. It is composed of 16 subtests, although no examinee receives more than 13 (only 4 subtests span the entire age range). Even before its publication in 1983 many diverse validity studies were conducted. The interpretive manual lists 43 of these studies which are now becoming available to the public.
Due to the recent publication date of the K-ABC there has not been as much research published as with other tests. The researcher will discuss the research available on the use of the K-ABC with different populations. There are no research papers using the K-ABC with a Puerto Rican population.

Zins and Barnett (1984); Naglieri (1984); and Naglieri (1985) and Klanderman, Devie and Mollner (1985), studied the validity of using the K-ABC with a non referred population. Zins and Barnett (1984), investigated the relationship between the K-ABC, the Stanford Binet and the WISC-R. They used forty neighborhood children who volunteered to participate in the study. The requirements for participation in the study were age, absence of any known physical, emotional, or cognitive impairments of a significant nature. The distribution of subjects was: age 6 (4 boys/2 girls), age 7 (3 girls), age 8 (1 boy/4 girls), age 9 (4 boys/2 girls), age 10 (4 boys/4 girls), age 11 (2 boys/3 girls), and age 12 (2 boys/5 girls). There were a total of five black children included in the sample.

Zins and Barnett reported that both the WISC-R Full Scale IQ and the Stanford Binet IQ scores were higher than the K-ABC Mental Processing Composite Score, although only the WISC-R Full Scale IQ difference reached statistical difference. They state that the K-ABC Mental Processing Composite and the WISC-R Full Scale IQs are not directly comparable to each other, although they are correlated to a rela-
tively high degree. Binet IQ scores were not significantly different from the K-ABC Mental Processing Composite although their intercorrelation was not as strong. The overall IQ differences among the three intelligence tests were low to moderate, thus leading some support to the use of the K-ABC as a valid measure of intelligence.

Naglieri (1984) examined the mean scores and predictive validity coefficients obtained from the Wechsler Intelligence Test for Children - Revised (WISC-R), the Kaufman Assessment Battery for Children (K-ABC), and the Peabody Individual Achievement Test (PIAT) with a Navajo sample. The K-ABC and the WISC-R were administered 1 week apart in counterbalanced order to 35 Navajo children aged 6-12 1/2 years (mean 8-9), followed 10 1/2 months later by the administration of the PIAT.

The following results were reported: the K-ABC yielded an overall mean of 95.0 which is significantly higher than the WISC-R Full Scale IQ mean of 86.9. All WISC-R and K-ABC global scores correlated significantly except the WISC-R Verbal and the K-ABC nonverbal scales. The WISC-R Verbal and Full Scale IQs and all five K-ABC scales correlated significantly with the PIAT total Test standard scores. It is also noted that the K-ABC Achievement scales correlated significantly higher with the PIAT Total Test than with the WISC-R Verbal and Full Scale IQs.

Naglieri concludes that since Navajo children score lower on the Verbal subtests of the WISC-R than on the
Performance scale and earn their lowest WISC-R subtest scores on Vocabulary and their lowest K-ABC subtest scores on tests that require verbalizations, a logical explanation for this discrepancy may be the influence of the English language on the Wechsler scale. His findings seem to imply that the K-ABC is a useful alternative to the WISC-R with Navajo children. This study is very significant since not many studies with the K-ABC have included minorities.

Naglieri continued his investigation of the use of the K-ABC with "normal" children in 1985. The aim his study was to examine the relationship between the McCarthy Scale of Children's Abilities and the K-ABC. The sample consisted of 51 children who attended first-through third grade classes at a university lab school. These children ranged in age from 6 years 8 months to 8 years 7 months. There were 24 males and 27 females, 50 of which were white and 1 Native American. Each subject was individually administered the McCarthy Scales and the K-ABC one week apart in counterbalanced order by one examiner. There were two examiners (one male and one female) who were certified school psychologists. The examiners tested males half the time and females half the time. Three months later, near the end of the school year, they administered the PIAT over a one week period.

Naglieri reported the following findings: that the McCarthy GCI of 101 and the K-ABC MPC of 102, along with near normal standard deviations indicate that the sample was
of average intellectual ability. He also found that there was a nonsignificant difference between the McCarthy CGI and K-ABC which provides construct validity support for the K-ABC. He suggests that further research should be conducted in this area to expand on his findings.

Klanderman, Devine and Mollner (1985) investigated whether the K-ABC measures the same constructs as the WISC-R and the Stanford-Binet. The comparisons with the WISC-R are based on Verbal Comprehension (which includes Information, Similarities, Vocabulary and Comprehension subtests); Perceptual Organization (Picture Completion, Picture Arrangement, Block Design, and Object Assembly); and Freedom from Distractibility (Arithmetic, Digit Span and Coding). It was expected that the K-ABC Mental Processing Composite would show a positive and significant correlation with the WISC-R Full Scale IQ and that the Simultaneous Scale would correlate highest with the Perceptual Organization factor, the Sequential Scale with the Freedom from Distractibility factor, and the Achievement Scale with the Verbal Comprehension factor.

The comparisons between the K-ABC and the Stanford-Binet were based on a theoretical model. The items of the Stanford Binet were grouped into categories comparable to the three K-ABC Scales—simultaneous, sequential and achievement, according to the cognitive process most clearly involved in the accomplishment of each task. Two additional Binet categories, language and memory were also formed. The
Binet subscales which utilize skills similar to those in the K-ABC Sequential Scale were The Wet Fall and Repeating Digits Forward. The ones that comprised the simultaneous category were Repeating Digits Backwards, Memory for Designs, and organizing a Plan of Search. Some tasks, such as Abstract Words at Year Level X, were viewed as consisting of both an achievement and language component and therefore were assigned credit on both categories. It was hypothesized that the K-ABC MPC would correlate positively and significantly with the Stanford-Binet IQ; the K-ABC Simultaneous Scale with the Binet "simultaneous" category, the K-ABC Sequential Scale with the Binet "sequential" and memory categories; and the K-ABC Achievement with the Binet "language" category.

They used the following sample: 41 second, third and fourth grade, English speaking students, (22 boys, 19 girls, 38 white and 3 non-white) in Illinois. Most of the students come from upper-middle-class families from a Chicago suburb.

The subjects were divided randomly in six groups and administered the K-ABC, WISC-R and Stanford-Binet in counter-balanced order. All testing was done by the investigators and completed in four months. Standard scores were computed for the K-ABC Simultaneous and Sequential Scales, Mental Processing Composite, and Achievement Scale for each subject. From the WISC-R, Full Scale IQs and Verbal Comprehension, Perceptual Organization, and Freedom from Distractibility factors scores were computed for each subject.
The relationship of the K-ABC MPC to the WISC-R FS IQ as well as the intercorrelations between the K-ABC scales and the WISC-R factors, was determined by computing zero order Pearson product-moment correlation coefficients. To further examine the intercorrelations between the K-ABC scales and the WISC-R factors, Hotelling's t test was performed.

After the Binet scores were grouped according to categories, each task was assigned a specific number of months for its accomplishment based on the number of similar (sequential, simultaneous, etc.) tasks at that age level. This credit allotment was then added to the basal age in each category, which constituted a derived mental age score. The Stanford-Binet scores were entered a total of six times for each child. The result was a Stanford-Binet IQ score for each child as well as a derived score in each of the five categories, thus allowing a direct comparison to similar process-oriented tasks of the K-ABC. The relationship of the K-ABC MPC to the Stanford-Binet Full Scale IQ, as well as the intercorrelations between the K-ABC scales and the Binet categories, was determined by computing zero-order Pearson product-moment correlation coefficients. Intercorrelations between the K-ABC scales and the Binet categories were further examined by using the Hotelling's t test.

The following results were reported, the K-ABC MPC, as well as the individual Simultaneous, Sequential, and Achievement Scales, yielded standard scores about one SD above that of the standardization sample. The mean WISC-R
and Stanford-Binet IQs were 122 and 123 respectively, both about 1 1/2 SD above the standardization population and in the same direction as the K-ABC scores.

Based on their findings they concluded that the moderate correlations of the K-ABC MPC with the WISC-R and the Binet IQs indicate a considerable degree of commonality in the construct of intelligence, yet at the same time reflect the different definitions of intelligence on which the tests were based. They also concluded that:

"The highest correlations of the WISC-R Full Scale IQ and the Stanford Binet IQ are with the K-ABC Achievement Scale. These correlations highlight the extent to which language-oriented, "achievement" tasks comprise this more traditional instruments. They also suggest that the K-ABC Achievement Scale, in addition to measuring school related skills and predicting school achievement, can by itself be viewed as a measure of intelligence as traditionally defined by Wechsler and Binet. The inclusion of the Achievement Scale in the Kaufman Battery will be important in providing some continuity for children previously tested with the WISC-R or the Stanford-Binet."

(P. 281)

If we want to continue using the definition of intelligence as defined by Wechsler and Binet it is imperative if we use the K-ABC to use the complete battery.

In the area of assessment of referred children for assessment the following research projects were conducted, Obrzut, Obrzut and Shaw (1984); Naglieri (1985) and Naglieri (1985). Obrzut, Obrzut and Shaw (1984) studied the construct validity of the Kaufman Assessment Battery for Children (K-ABC) via correlational procedures with the WISC-R, the ability of the K-ABC to provide unique diagnostic infor-
mation with these special populations and the nature of performance of both groups on the K-ABC processing scales. The sample consisted of thirty-two special population children selected from kindergarten through grade five, 19 children were diagnosed as learning disabled and 13 as educable mentally retarded. All children had received an extensive psychoeducational evaluation conducted by a multidisciplinary team prior to their placement in a special class. Each subject was administered the K-ABC and the WISC-R.

Obrzut, Obrzut and Shaw reported the following results: construct validity was determined by correlating the scales of the K-ABC with the scales of the WISC-R. When the Mental Processing Composite (MPC) was compared to the WISC-R Full Scale IQ a high relationship was apparent \( (r = .80, p < .001) \). The MPC demonstrated an even stronger relationship with the WISC-R Performance IQ \( (r = .87, p < .001) \).

Orbzut et al concluded that since the correlation coefficients revealed evidence of construct validity and a strong relationship between the K-ABC Mental Processing Composite and the WISC-R Full Scale IQ, these data in conjunction to the validity studies reported in the K-ABC technical manual, suggest that the K-ABC may be used to estimate a general level of intellectual functioning.

Orbzut et al also concluded that this new instrument should be of particular use in the identification of some learning disabled children but that its weakness appears to involve the exclusion of verbal or language measures. This
results in the K-ABC MPC having reduced utility in the diagnosis of severe language related disorders and mental retardation.

Naglieri (1985) continued to compare the assessment of mentally retarded children using the K-ABC. He used the Wechsler Intelligence Scale for Children-Revised (WISC-R) and the Kaufman Assessment Battery for Children (K-ABC) with 37 mentally retarded children. The predictive validity of these instruments was examined using the Peabody Individual Achievement Test, administered 7 months later. He examined the differences in intellectual ability scores that result using both tests. To examine the relationship among the K-ABC Processing Scales and achievement. He also proposed to evaluate the predictive validity of both of the instruments using the Peabody and to draw some conclusions about the appropriateness of the K-ABC for assessment of retarded children.

The subjects were 37 children who ranged in age from 5.33 years to 12.5 years. There were 20 males and 17 females (54% white, 11% black, 27% Hispanic, 8% Native American). Each child spoke English as their primary language and was previously identified as mentally retarded according to state and federal guidelines and attended special education programs on a full time basis. The children were administered the WISC-R, K-ABC and PIAT over a period of a year. The WISC-R and K-ABC were administered in counterbalanced order, approximately 1 month apart. All tests were
administered by three certified school psychologists (one female, two males).

Naglieri reported the following results: means and standard deviations of the WISC-R and K-ABC were calculated. It revealed that the sample earned average standard scores on both instruments that fall in the mentally deficient range according to Wechsler (1974).

Naglieri concluded that the K-ABC may be a viable option to the WISC-R because it appears to measure ability, as defined by simultaneous and sequential processing styles, without the same academic verbal concepts influences apparent with the WISC-R. He also reported that the WISC-R Verbal Scale appears to yield scores, intended to reflect verbal intelligence, that seem to be influenced by academic verbal concepts, confounding the measurement of ability. He also concluded that the WISC-R and the K-ABC do not seem to be equal in terms of predictive validity. He claims that the data from this study suggests that if one wishes to predict academic performance, the K-ABC Achievement Scale offers a better prediction than the WISC-R or the K-ABC Mental Processing Scales.

Naglieri (1985), studied the use of the WISC-R and the K-ABC with learning disabled, borderline mentally retarded and normal children. The sample consisted of 101 children between the ages of 8.1 and 12.5 (95% whites and 5% black), divided into 34 normal, 34 learning disabled and 33 borderline mentally retarded. The WISC-R and the K-ABC were indi-
vidually administered to each child in counterbalanced order in two sessions one week apart by one of two female examiners. The examiners were certified school psychologists. He reported that there was a similarity between the WISC-R Full Scale IQ and the K-ABC Mental Processing Composite mean scores which suggests that examiners can expect that these two instruments will yield similar scores. He also concluded that this instrument may be acceptable when placement decisions need to be made.

Kaufman (1984), defended the use of the K-ABC in the identification of gifted children. He mentions several reasons why the K-ABC should be used for identifying gifted children. Gifted and talented children were systematically included in the standardization sample of the K-ABC in proportions that approximate the proportions within the U.S. elementary and secondary schools.

The theoretical foundation of the K-ABC, which is rooted in experimental, and clinical neuropsychology and cognitive psychology, provides and additional rationale for its use with gifted children. He claims that since the K-ABC is based in theory it is better able to discriminate who are gifted than the Wechsler Intelligence Scales or the Stanford Binet. Kaufman states that Binet was arbitrary in his selection of tasks to measure intelligence. He also criticizes the Wechsler scales as being based on Binet and the non verbal scales used to identify which immigrants were smart enough to serve in the World War I. He acknowledges
that both the Binet and the Wechsler scales have shown practical utility in assessing gifted children, but that they were not based on a systematic theory of intelligence, but rather from attempts to determine whether children were bright enough to perform adequately within the mainstream of conventional education. Kaufman maintains that since the K-ABC is derived from theories of how people process information it should be a better measure of giftedness.

Kaufman also maintains that the strategies that the children need to use to successfully complete the K-ABC form a good basis for identifying gifted children. The K-ABC also contains both very easy and very difficult items to discriminate between retarded and gifted children. The items that were solved by very few children in the normative sample were kept to help identify gifted children.

Kaufman concludes that the K-ABC seems to be of most use for identifying gifted children in the 2 1/2-10 1/2 year range. He considers that that it does not have enough ceiling on a number of subtests at ages 11 and 12. This limitation is very important to remember so as to be aware of complementing the administration of this test with other tests when used with children in this age range suspected of being gifted. Some research has been conducted studying the effect of using the K-ABC with gifted children.

R. Steve McCallum, Frances A. Karnes and Ron F. Edwards (1984) compared the use of the Wechsler Intelligence Scale for Children-Revised, the Stanford Binet and the Kaufman As-
essment Battery for children in the identification of gifted children. They wanted to examine the K-ABC performance of gifted children with particular emphasis on comparisons with the WISC-R and the S-B.

The subjects were 41 students, 21 females and 20 males between ages of 9.5 to 12.5 years. All the children were enrolled in a public school gifted program, grades 4 to 6 in a small rural city in Mississippi. All the subjects had met the state's criteria for participating in a gifted program. The K-ABC was administered to each subject by three psychology graduate students trained to administer the K-ABC. The S-B and WISC-R scores were obtained within the last three years.

Only 8 of the 11 mental processing subtests were administered because the children were too old to complete the other subtests. They concluded that:

"For these gifted children the K-ABC yielded significantly lower scores than the S-B or WISC-R. The results suggest that the K-ABC mental processing scales may only provide a limited assessment of highly developed verbal abilities of many gifted children."

P.62

The use of the K-ABC to provide a mental abilities estimate for placement in gifted classes is more limited than the S-B or the WISC-R.

Naglieri and Anderson (1985) conducted a carefully controlled WISC-R/K-ABC comparison study for gifted children. The subjects of the study were 38 fifth and sixth grade students who attended school in a suburban district and that
had been identified as gifted previously. There were 18 fifth graders and 20 sixth graders with equal number of boys and girls in each group.

The children were identified as gifted using a multi-factored assessment procedure that included intelligence, achievement (reading and mathematics), classroom performance, and behavior rating scale data. Group intelligence tests (Otis Lennon Mental Abilities Test or the Cognitive Abilities Test) and individual tests such as the Slosson Intelligence Test, Stanford Binet or WISC-R were used in the identification process at least one year before.

The K-ABC and WISC-R were administered in a counterbalanced order approximately one week apart by two female school psychology graduate students. Pearson product moment correlations were computed for all variables. Standard scores were used in all computations and analyses. When two variables were compared a t test for the difference between correlated means was used. To maintain an experiment wise error rate of .01, t values of 3.6 were required for significance.

The following conclusions were reported by Naglieri and Anderson,

"The K-ABC may provide significantly lower estimates of intellectual performance than the WISC-R for fifth and sixth grade children identified as gifted. The reason for the lower K-ABC scores appears to be the result of a limited K-ABC ceiling at the upper ages for high functioning children."

(P.179)
These conclusions confirm the findings of McCallum, Karnes and Edwards (1984). It seems necessary for examiners to be aware of the limitation of the K-ABC when assessing gifted children in fifth and sixth grade.

McCallum, Karnes and Oehler-Stinnett (1985) studied the construct validity of the K-ABC for gifted children. The sample they used consisted of 54 students, enrolled in grades 4 through 6; 24 were males and 30 females. All the subjects were enrolled in a public school program for the gifted. They had met the requirements of the program which included an IQ of 130 or above on either the Stanford-Binet or the Wechsler Intelligence Scale for Children-Revised.

The K-ABC was administered by graduate students in psychology all trained in the administration of the K-ABC. The data was analyzed using factor principle analysis which was the same process reported in the K-ABC manual. An additional analysis was conducted for the mental processing subtests. The data was then compared to the K-ABC standardization sample to determine factor loading similarity by Program Relate. Relate arbitrary equates the origins and the factor vector orientations of one factor structure and subsequently rotates the factor's axes to maximize the overlap between corresponding variable vectors. The degree of rotation necessary is expressed as a matrix of cosines which may be interpreted as correlations between the factor variables generated from the two independent analyses. The final step in this procedure yields a matrix of cosines between all
pairs of vectors after reorientation of one of the matrices is accomplished with the initial factor cosine matrix. The diagonal elements of this matrix are indices of the constancy of individual variables across the two independent analyses and are symbolized by "R".

The means and results from the principal factor analysis indicate that although the processing subtest means and achievement means are higher than average as they are lower than might be expected considering the cutoff of 130 employed as the criterion for inclusion into the program. From the Program Relate results, it is apparent that the factor structure for these gifted children is not significantly different from that of the standardization sample. The correlations between corresponding factors across the two samples are extremely high (.99 for all corresponding factors).

They concluded that the factor structure of the K-ABC for elementary-aged gifted students is very similar to the factor structure reported for students from the standardization data, although the common variance estimates are smaller than those reported for the total sample. The test appears capable of assessing Simultaneous and Successive Processing and achievement in these gifted students in the same manner as in their nongifted counterparts. However, they warn that these results from gifted students seem to be relatively more dependent upon specific and/or error vari-
ance than are results from the more typical or average children from the standardization sample.
CHAPTER III
METHODOLOGY

This research study investigated the relative effectiveness, of the Kaufman Assessment Battery for Children (K-ABC) in Spanish and the Escala de Inteligencia Wechsler para Niños- Revisada (EIWN-R) with second graders in Puerto Rico. The researcher investigated the following hypotheses:

1. There will be no significant difference in the performance of male and female Puerto Rican second grade children in the Escala de Inteligencia Wechsler para Niños- Revisada (EIWN-R).

2. There will be no significant difference in the performance of male and female Puerto Rican second grade children in the Kaufman Assessment Battery for Children (K-ABC).

3. There will be no significant difference in the subscale scores of the EIWN-R and the K-ABC of Puerto Rican children.

4. There will be no significant difference in the total scores of the EIWN-R and the K-ABC of Puerto Rican children.

5. There will be no significant difference in the Puerto Rican children's performance on the K-ABC and the teacher's estimate of their ability as measured by the cumulative grade average for the year.

6. There will be no significant difference in the Puerto Rican children's performance on the EIWN-R and the
teacher's estimate of their ability as measured by the cumulative grade average for the year.

Sample

The sample consisted of 30 second graders, males and females, ages 7.0 to 9.11 years old enrolled in an urban public school in a town along the Southwest coast of Puerto Rico. The school is one of two elementary schools in the town. The school had a total population of 807 students. There were 123 registered in the second grade. There are four second grade classes divided according to academic achievement, 2-1 being the brightest and 2-4 the slowest group.

The criteria for participating in the study was that the children were not enrolled in special education classes or had been referred for placement or evaluation for such program. The socioeconomic level of the children that participated in the study were determined by their eligibility to receive free lunch in the school.

The sample was randomly selected. The children identified as meeting the criteria from all four second grade classes were given a letter to take home asking parents for permission to participate in the study. These forms were given to the school's social worker who randomly selected 30 students from those who returned the forms.
Instruments

The following instruments were used to collect the data: Escala de Inteligencia Wechsler para Niños- Revisada (Wechsler Intelligence Scale for Children- Revised, Spanish version 1982) and the Kaufman Assessment Battery for Children in Spanish, (Kaufman and Kaufman, 1983).

In 1949, Wechsler published the Wechsler Intelligence Scale for Children, it was designed and organized as a test of general intelligence. Wechsler believed that general intelligence exists; that it is possible to measure it and that in doing so one can obtain a meaningful and useful measure of a subject's mental capacity. (Wechsler, 1974). The test was revised in 1974, but it retained its original design.

The test consists of twelve tests, six on the Verbal Scale and six on the Performance Scale. Only ten of these subscales are used in the calculation of the IQ. The Verbal Subscales are: Information, Similarities, Arithmetic, Vocabulary, Comprehension and Digit Span. The Performance Subscales are: Picture Completion, Picture Arrangement, Block Design, Object Assembly, Coding and Mazes. Digit Span on the Verbal Subscales and Mazes on the Performance Subscales were not used in establishing the IQ tables. They were kept as supplementary tests, to be administered when time permits, or to serve as substitutes if a regularly administered test could not be given. Special instructions were given to use these two tests as substitutions.
Wechsler believed that the dichotomy he proposed in dividing the scale into Verbal and Performance is the way of identifying the two principal ways by which human abilities are expressed.

The WISC-R was normed using groups that were representative of the United States population according to the 1970 Census Report. The variables used were: age, sex, race (white, nonwhite)- [nonwhites included blacks and also nonwhite groups such as American Indians and Orientals, Puerto Ricans and Chicanos were categorized as white or nonwhite in accordance with visible physical characteristics], geographic region, occupation of the head of the household and urban rural residence. In order to guarantee that the normative sample would include representative proportions of various classes of children a stratified sampling plan was adopted. The range of the scale is from 6 years 0 months through 16 years 11 months.

The WISC-R IQs are based on scaled scores derived separately for each age group. To construct the IQ table for the WISC-R, three sums of scaled scores (Verbal, Performance and Full Scale) were obtained for each child in the the standardized sample. The sums of scaled scores were based on five Verbal Tests, five Performance Tests and on the total of these ten scores (Full Scale). (Wechsler, 1974).

According to the Manual, the WISC-R must be administered and scored by a competent, trained examiner. The examiner must follow the instructions very carefully. These
procedures were strictly adhered to during the standardization, and valid test results depend to a great extent on the examiner's compliance with them.

The "Escala de Inteligencia Wechsler para Niños-Revisada" is a translation of the WISC-R, and was developed in Dade County, Florida in 1982. It was pilot tested after a careful examination by The Psychological Corporation in Miami. The test sample consisted of 105 children with Spanish surnames, who were randomly selected from the Dade County Schools.

The problems related to a Spanish translation of the test that would be useful with all Spanish speaking children in the United States and abroad are addressed in this translation. The testing manual provides a list of alternative words or phrases to be used according to the nationality of the children, i.e. if they are Cuban, Mexican American or Puerto Rican the appropriate words for each group are given. These alternative words or expressions were recommended by Mexican American, Puerto Rican and Cuban native speakers of Spanish. The examiners are encouraged to use the phrase that they judge to be the most appropriate for a particular child.

According to the Manual there are no special norms for this experimental edition. They encourage the development of norms for use with this edition.
The Kaufman Assessment Battery for Children (K-ABC) was published in 1983 by Allan and Nadeen Kaufman. It is a test that assesses the intelligence and achievement of 2 1/2 to 12 1/2 years old children. Intelligence as measured by the K-ABC, is defined in terms of an individual's style of solving problems and processing information; this definition also stresses the level of skill in each style of information processing, has a strong theoretical foundation in the domain of both neuropsychology and cognitive psychology.

The test is divided in Sequential Processing, Simultaneous Processing and Achievement scales. Sequential processing places a premium on serial or temporal order of stimuli when solving problems. Simultaneous processing demands a "gestalt" like frequently spatial, integration of stimuli to solve problems with maximum efficiency. The Achievement Scale on the other hand was derived from only rational and logical considerations. It includes innovative measures of skills that are traditionally assessed by tests of global or verbal intelligence (vocabulary, language concepts), tests of school achievement (reading) or both (arithmetic, general information).

The Sequential Processing Scale consists of: Hand Movements, Number Recall, and Word Order. The Simultaneous Processing Scales consists of: Magic Window, Face Recognition, Gestalt Closure, Triangles, Matrix Analogies, Spatial Memory and Photo Series. The Achievement Scale consists of:
Faces & Places, Arithmetic, Riddles, Reading/Decoding, Reading/Understanding. Not all of these subtests are administered to all children. No examinee is administered more than 13 subtests.

The goals in developing the K-ABC were: to measure intelligence from a strong theoretical and research basis, to separate acquired factual knowledge from the ability to solve unfamiliar problems, to yield scores that translate to educational interventions, to include novel tasks, to be easy to administer and objective to score and to be sensitive to the diverse need of preschool, minority group, and exceptional children. These goals seem to be comprehensive.

The K-ABC test was standardized on 2,000 children, 100 at each half year of age between 2 years, 6 months, and 12 years, 5 months. The sample was stratified on the variables of sex, parental education, race or ethnic group (white, black, Hispanic, other), geographic region, community size, and educational placement. This last variable was used to make sure that the sample included proportional representation of exceptional children. An additional group of 615 children (496 blacks, 119 white) were tested and added to the standardization cases to develop supplementary sociocultural norms. (Kaufman & Kaufman, 1983).

Administration of the K-ABC requires a competent, trained examiner. As with any other psychological test the administration manual suggests that the State laws should be
followed to determine who can administer an intelligence test. These guidelines should always be followed.

A Spanish translation of the K-ABC is included in the Administration and Scoring Manual. The main purpose of this translation is to administer the K-ABC to bilingual Hispanic children in the United States. It is recommended that Hispanic children who do not speak English at all should be tested using the Spanish K-ABC which is being developed in Mexico or with the Nonverbal Scales. The K-ABC is currently being normed in Mexico for use with Spanish speaking children.

Spanish speaking examiners are encouraged to use the K-ABC in Spanish when testing Spanish dominant children in the States because the norms are more relevant for those children. Directions for administering and scoring the K-ABC in Spanish are included in Appendix B. The manual states that the Spanish translation was done in Mexico, and that some modifications might be needed when used with children from other Spanish backgrounds.
Examiner

The examiner was a male doctoral candidate in Counseling Psychology with over five years of experience in the administration of intelligence tests. He was equally familiar with the WISC-R and K-ABC administration, scoring and interpretation procedures. He is licensed by the Commonwealth of Puerto Rico to work as a psychologist since 1985. He was certified by the local ruling authorities to administer, score and interpret intelligence tests as it is suggested in the administration manual of the tests he used in this research.

Testing Procedures

The researcher met with the Under Secretary of Education of the Commonwealth of Puerto Rico to explain the purpose of the research and to obtain permission from her office. He submitted the necessary forms to get permission to collect the data in the public school system, copy of this letter is in Appendix D. After permission was granted, the researcher met with the superintendent of schools of the assigned school district to explain the purpose and relevance of the study. The superintendent then assigned the school where the researcher collected the data.

The researcher met with the principal of the assigned school to coordinate the data collection. The examiner in coordination with the school principal and the social worker met with all the second grade teachers to identify the subjects that met the criteria established in the population
After the children had been properly identified, the investigator sent a letter to each parent or guardian to secure permission to participate in the study, copy attached (see appendix D). The parents returned the forms to the school principal and the social worker. The social worker randomly selected the thirty (30) students for the research. The researcher did not participate in the final selection process of the sample.

The investigator organized the forms according to classrooms. A list was made of the children and the test administration was scheduled according to a counter balanced order. The order of test administration was randomly allocated. Each child was assigned the order in which the tests was administered. Each research participant was assigned a number, then the researcher used these numbers to randomly assigned the test order. The Escala de Inteligencia Wechsler para Niños- Revisada (EIWN-R) was administered first to half of the children and the following week the Kaufman Assessment Battery for Children was administered to the same children. The opposite order of test administration was carried out for the other half of the subjects.

Each test was individually administered in Spanish following the manual guidelines. The EIWN-R was administered in its totality. Only the Mental Processing Subscales of the K-ABC were administered. The Achievement Subscales were not used because as it was discussed earlier in the instruments section, they are intended to measure factual knowl-
edge and skills that are acquired in school. Since the sub-
jects used in this study have never studied in the United
States, the information measured in this subscale is not
relevant to the study.

The researcher administered the tests during the school
hours. He was assigned a testing room near the library
where he would have privacy and the quietness necessary for
the testing. All personnel cooperated with the examiner.
The children were escorted to and from the testing room by
the examiner.

After all the testing was completed the investigator
met with each teacher to gather the final year's cumulative
grade point average for each of the subjects. The scale
used to evaluate the children's performance is based on a
four (4) point scale, where 1.0 is equal to a D average, 2.0
is equal to a C average, 3.0 is equal to a B average and 4.0
is equal to an A average. The children were enrolled in
self contained classes. The examiner also gathered the data
regarding the socioeconomic level of each of the partici-
pants, these were taken from the lunch forms filled out by
every student at the beginning of the school year.
Analysis of data

Correlation analysis were used to examine the data and test the hypotheses of the study. The correlation coefficient provided a single number which summarized the relationship between two variables, (test scores of males and females, subscales scores on the EIWN-R and the K-ABC, total score on the EIWN-R and the K-ABC, K-ABC and EIWN-R total scores and teacher's grading), and produced a single summary statistic that described the strength of the relationship. In order to determine the level of significance of the correlation coefficients a Fisher's t test was computed. These results are presented in the next chapter.

Significance

Since so much emphasis has been given to the assessment of children in our culture, it is important to determine which are the most reliable and valid instruments in the assessment of language minorities. This research helped us determine whether the Kaufman Assessment Battery for Children and the Escala de Inteligencia Wechsler para Ninos-Revisada are comparable and valid instruments for the assessment of Spanish speaking, second graders in Puerto Rico.

It gave us also more information about the reliability and concurrent validity of these instruments and how they relate with teacher's grades.

This research will help us determine if there is any difference in the assessment of Puerto Rican children when
we use the Escala de Inteligencia Wechsler para Niños-Revisada and the Kaufman Assessment Battery for Children. If there is a significant difference between the two, it will enable us to use the most reliable and valid one. Hopefully it will also provoke others to further investigate the assessment of language minorities in the United States.
CHAPTER IV

ANALYSIS OF DATA

The major purpose of this research study was to compare the performance of Puerto Rican second grade students on the Escala de Inteligencia Wechsler para Niños-Revisada (WISC-R) and on the Kaufman Assessment Battery for Children. These results will be compared to other studies completed before in the United States and Puerto Rico in order to determine whether there are any differences between the results reported here and those conducted before. This chapter presents the data obtained to test for the hypothesis.

The data presented in this chapter were collected by using a sample of 30 second graders in a small town along the South West coast of Puerto Rico. This sample was drawn of a total of 123 second grade students in one of the town's schools. The research instruments used were the Escala de Inteligencia Wechsler para Niños-Revisada which is a Spanish translation of the Wechsler Intelligence Scale for Children Revised and the Kaufman Assessment Battery for Children in Spanish. Other data (final cumulative grade point average and socioeconomic status) were collected from the student's school record.

The statistical procedures employed for the analyses of the results were correlation coefficients and t tests. All hypothesis were treated at the .05 level of significance.
Findings

Table 1
MEAN IQ SCORES OF PUERTO RICAN SECOND GRADE STUDENTS
BY TEST AND SUBTESTS

<table>
<thead>
<tr>
<th>TEST</th>
<th>MEAN</th>
<th>S.D.</th>
<th>S.E.M.</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIWN-R</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VERBAL</td>
<td>112.77</td>
<td>16.84</td>
<td>3.13</td>
</tr>
<tr>
<td>PERFORMANCE</td>
<td>106.50</td>
<td>13.57</td>
<td>2.52</td>
</tr>
<tr>
<td>TOTAL</td>
<td>110.77</td>
<td>15.72</td>
<td>2.92</td>
</tr>
<tr>
<td>K-ABC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEQUENTIAL</td>
<td>97.67</td>
<td>14.16</td>
<td>2.63</td>
</tr>
<tr>
<td>SIMULTANEOUS</td>
<td>105.10</td>
<td>17.17</td>
<td>3.19</td>
</tr>
<tr>
<td>MPC</td>
<td>102.37</td>
<td>15.34</td>
<td>2.85</td>
</tr>
</tbody>
</table>

*n= 30

The analysis begins with an examination of the obtained data to compare it to the original findings reported in the manuals of the tests used in this research. Both WISC-R and K-ABC manuals report a total IQ mean of 100 and a SD of 15. The WISC-R total IQ mean obtained in this research was 110.77 and a SD 15.72. When we compare the results obtained in this research with those reported on the test manual we notice that in this research a higher WISC-R total IQ mean was obtained.
The mean for the Mental Processing Composite IQ for the K-ABC in this research was 102.37 and a SD of 15.34. When we examine the K-ABC total Mental Processing Composite mean IQ we notice that the difference between the obtained mean and that reported in the manual is not as large but the research mean is also higher. These differences will be thoroughly discussed in Chapter 5.

**Hypothesis 1**

**Hypothesis 1:**

There will be no significant difference in the performance of Puerto Rican male and female second grade children in the Escala de Inteligencia Wechsler para Niños-Revisada (EIWN-R).

In order to determine whether there was a statistically significant difference between the mean scores of males and females on the Escala de Inteligencia Wechsler para Niños-Revisada and on the Kaufman Assessment Battery for Children in Spanish, a t test was calculated. Results are presented in Table 2.
Table 2
DIFFERENCES IN PERFORMANCE BY SEX ON THE ESCALA DE INTELIGENCIA WECHSLER PARA NINOS- REVISADA BY PUERTO RICAN SECOND GRADE STUDENTS

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>S.D.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>110.06</td>
<td>17.45</td>
<td>-.212*</td>
</tr>
<tr>
<td>Females</td>
<td>111.69</td>
<td>13.07</td>
<td></td>
</tr>
</tbody>
</table>

n = 30  * t.05 = 2.048  d.f. = 28

Based upon the results presented in Table 2 we can conclude that there are no sex differences in the scores. The difference between means was not significant, that is the test is not biased in terms of sex. Hypothesis 1 is supported by the data.

Hypothesis 2

Hypothesis 2:
There will be no significant difference in the performance of Puerto Rican male and female second grade children in the Kaufman Assessment Battery for Children (K-ABC).

This hypothesis was tested using a t test. Results are presented on Table 3.
Table 3
DIFFERENCES IN PERFORMANCE BY SEX OF SECOND GRADE PUERTO RICAN STUDENTS ON THE KAUFMAN ASSESSMENT BATTERY FOR CHILDREN IN SPANISH

<table>
<thead>
<tr>
<th>Sex</th>
<th>Mean</th>
<th>S.D.</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Males</td>
<td>102.94</td>
<td>16.60</td>
<td>.22*</td>
</tr>
<tr>
<td>Females</td>
<td>101.62</td>
<td>13.47</td>
<td></td>
</tr>
</tbody>
</table>

n= 30 t.05= 2.048 d.f. =28

Examining the data presented in table 3 we can also conclude that there were no sex differences on the test scores. The difference between means was not significant, Hypothesis 2 was supported by the data.

Differences Between the EIWN-R and the K-ABC

The first major hypothesis of the study concerned if there is any difference in what is measured by each of the subscales of the Escala de Inteligencia Wechsler para Niños Revisada and the Kaufman Assessment Battery for Children. This would be to determine whether they both measure the same construct that we know as intelligence.
### Table 4

**Test Results of Puerto Rican Second Grade Students on the Escala de Inteligencia Wechsler para Niños-Revisada, the Kaufman Assessment Battery for Children in Spanish and Their Grade Point Average**

<table>
<thead>
<tr>
<th>Student</th>
<th>WISC-R</th>
<th>K-ABC</th>
<th>GPA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Verbal</td>
<td>Perf.</td>
<td>Total</td>
</tr>
<tr>
<td>1</td>
<td>114</td>
<td>118</td>
<td>118</td>
</tr>
<tr>
<td>2</td>
<td>136</td>
<td>129</td>
<td>136</td>
</tr>
<tr>
<td>3</td>
<td>119</td>
<td>114</td>
<td>119</td>
</tr>
<tr>
<td>4</td>
<td>145</td>
<td>131</td>
<td>142</td>
</tr>
<tr>
<td>5</td>
<td>137</td>
<td>121</td>
<td>133</td>
</tr>
<tr>
<td>6</td>
<td>123</td>
<td>092</td>
<td>109</td>
</tr>
<tr>
<td>7</td>
<td>143</td>
<td>112</td>
<td>132</td>
</tr>
<tr>
<td>8</td>
<td>100</td>
<td>102</td>
<td>101</td>
</tr>
<tr>
<td>9</td>
<td>139</td>
<td>124</td>
<td>135</td>
</tr>
<tr>
<td>10</td>
<td>137</td>
<td>128</td>
<td>136</td>
</tr>
<tr>
<td>11</td>
<td>103</td>
<td>106</td>
<td>105</td>
</tr>
<tr>
<td>12</td>
<td>100</td>
<td>098</td>
<td>099</td>
</tr>
<tr>
<td>13</td>
<td>118</td>
<td>093</td>
<td>107</td>
</tr>
<tr>
<td>14</td>
<td>101</td>
<td>121</td>
<td>111</td>
</tr>
<tr>
<td>15</td>
<td>111</td>
<td>102</td>
<td>107</td>
</tr>
<tr>
<td>16</td>
<td>106</td>
<td>105</td>
<td>105</td>
</tr>
<tr>
<td>17</td>
<td>120</td>
<td>108</td>
<td>117</td>
</tr>
<tr>
<td>18</td>
<td>119</td>
<td>124</td>
<td>124</td>
</tr>
<tr>
<td>19</td>
<td>101</td>
<td>087</td>
<td>093</td>
</tr>
</tbody>
</table>
Hypothesis 3

Hypothesis 3:

There will be no significant difference in the subscale scores of the EIWN-R and the K-ABC of second grade Puerto Rican children.

In order to determine the relation between the subscale scores of the EIWN-R and the K-ABC a correlation coefficient was calculated and in order to determine whether this correlation was significant a t test was calculated. These coefficients provide evidence of concurrent validity. Results are presented in Table 5.
Table 5

A COMPARISON OF THE SUBSCALE SCORES OF THE ESCALA DE INTELIGENCIA WECHSLER PARA NINOS REVISADA AND THE KAUFMAN ASSESSMENT BATTERY FOR CHILDREN IN SPANISH OF PUERTO RICAN SECOND GRADE STUDENTS

<table>
<thead>
<tr>
<th>Subscales</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>r</th>
<th>t</th>
<th>d.f</th>
<th>t prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>WISC-R Verbal</td>
<td>30</td>
<td>112.75</td>
<td>16.84</td>
<td>.521</td>
<td>3.696</td>
<td>29</td>
<td>.001</td>
</tr>
<tr>
<td>K-ABC Seq.</td>
<td>30</td>
<td>97.67</td>
<td>14.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WISC-R Verbal</td>
<td>30</td>
<td>112.77</td>
<td>16.84</td>
<td>.617</td>
<td>1.717</td>
<td>29</td>
<td>.05</td>
</tr>
<tr>
<td>K-ABC Sim.</td>
<td>30</td>
<td>105.10</td>
<td>17.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WISC-R Perf.</td>
<td>30</td>
<td>106.50</td>
<td>13.57</td>
<td>.568</td>
<td>.344</td>
<td>29</td>
<td>.366</td>
</tr>
<tr>
<td>K-ABC Sim.</td>
<td>30</td>
<td>105.10</td>
<td>17.17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WISC-R Perf.</td>
<td>30</td>
<td>106.50</td>
<td>13.57</td>
<td>.441</td>
<td>2.426</td>
<td>29</td>
<td>.01</td>
</tr>
<tr>
<td>K-ABC Seq.</td>
<td>30</td>
<td>97.67</td>
<td>14.16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

n = 30

The correlation coefficient indices presented in table 5 range from the lowest of .441 to .617. The highest correlation is between the EIWN-R Verbal IQ and the K-ABC Simultaneous IQ was .617 which can be considered a high correla-
tion. The lowest correlation is between the EIWN-R Performance IQ and the K-ABC Sequential IQ which was .441, this can also be considered a moderate positive correlation. The correlation coefficient between EIWN-R Verbal IQ and the K-ABC Sequential IQ is .52 which can be considered a fair degree of relationship between the subtests. The correlation between EIWN-R Performance IQ and the K-ABC Simultaneous IQ was .57 which can be considered as having a fair degree of relationship. In summary all the correlations are positive and range from a moderate positive correlation to a high correlation. Hypothesis 3 is supported by the data.

Hypothesis 4

Hypothesis 4

There will be no significant difference in the total score of the EIWN-R and the K-ABC of second grade Puerto Rican children.

In order to determine whether there was a statistically significant difference between the total score of the Escala de Inteligencia Wechsler para Niños Revisada and the total score of the Kaufman Assessment Battery for Children, a correlation coefficient and an ANOVA were calculated. Results are presented in tables 6A and 6B.
Table 6 A

COMPARISON OF TOTAL IQ SCORE OF THE ESCALA DE INTELIGENCIA WECHSLER PARA NINOS- REVISADA AND THE TOTAL MENTAL PROCESSING COMPOSITE OF THE KAUFMAN ASSESSMENT BATTERY FOR CHILDREN IN SPANISH OF SECOND GRADE PUERTO RICAN STUDENTS

<table>
<thead>
<tr>
<th>Test</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>r</th>
<th>t</th>
<th>df</th>
<th>t prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIWN-R</td>
<td>30</td>
<td>110.77</td>
<td>15.72</td>
<td>.686</td>
<td>2.060</td>
<td>29</td>
<td>.02</td>
</tr>
<tr>
<td>K-ABC</td>
<td>30</td>
<td>102.37</td>
<td>15.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[ n = 30 \]

Table 6 B

ANOVA SUMMARY TABLE BETWEEN THE TOTAL IQ SCORE OF THE ESCALA DE INTELIGENCIA WECHSLER PARA NINOS -REVISADA AND THE TOTAL MENTAL PROCESSING COMPOSITE OF THE KAUFMAN ASSESSMENT BATTERY FOR CHILDREN IN SPANISH OF SECOND GRADE PUERTO RICAN STUDENTS

<table>
<thead>
<tr>
<th>Source of variation</th>
<th>df</th>
<th>Sum of Squares</th>
<th>F</th>
<th>F sig. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between</td>
<td>1</td>
<td>1058.4</td>
<td>4.242</td>
<td>.04</td>
</tr>
<tr>
<td>Within</td>
<td>58</td>
<td>14470.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>15528.73</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[ n = 30 \]

As presented in table 6A the correlation between the
Escala Wechsler de Inteligencia para Niños Revisada and the Kaufman Assessment Battery for Children is .686 which can be considered a high positive correlation. This finding is similar to the one presented in Table 6 B. Hypothesis 4 is supported by these findings.

**Hypothesis 5**

There will be no significant difference in the Puerto Rican children's performance on the K-ABC and the teacher's estimate of their ability as measured by the cumulative grade average for the year.

In order to determine whether there was a relation between the teacher's estimate of ability as measured by the cumulative grade point average for the year and the Mental Processing Composite of the Kaufman Assessment Battery for Children a correlation coefficient and a rank correlation were computed. These findings are presented in Tables 7A and 7 B.
Table 7 A
CORRELATION BETWEEN PUERTO RICAN SECOND GRADE CHILDREN'S PERFORMANCE ON THE KAUFMAN ASSESSMENT BATTERY FOR CHILDREN IN SPANISH AND TEACHER'S RATING OF THEIR ACADEMIC PERFORMANCE

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>r</th>
<th>t</th>
<th>df</th>
<th>t prob</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGPA</td>
<td>30</td>
<td>3.46</td>
<td>.678</td>
<td>.645</td>
<td>4.41</td>
<td>28</td>
<td>.001</td>
</tr>
<tr>
<td>K-ABC</td>
<td>30</td>
<td>102.37</td>
<td>15.34</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

n = 30

Table 7 B
RANK CORRELATION BETWEEN PUERTO RICAN SECOND GRADE CHILDREN'S PERFORMANCE ON THE KAUFMAN ASSESSMENT BATTERY FOR CHILDREN IN SPANISH AND TEACHER'S RATING OF THEIR PERFORMANCE

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGPA</td>
<td>30</td>
<td>3.46</td>
<td>.678</td>
<td>.7785</td>
</tr>
<tr>
<td>K-ABC</td>
<td>30</td>
<td>102.37</td>
<td>15.34</td>
<td></td>
</tr>
</tbody>
</table>

n = 30

Tables 7 A and 7 B present a summary of the correlation
between the Mental Processing Composite of the Kaufman Assessment Battery for Children and the teacher's estimate of ability as measured by the cumulative grade point average for the year. It can be seen that there is a relationship between the children's performance on the K-ABC and the cumulative grade point average. If children scored high on the K-ABC they were also graded highly by their teacher. That is their academic performance was at the same level of their measured potential. This finding is confirmed by the findings presented in Table 7 B which presents the rank correlation coefficient. Hypothesis 5 is supported by the data.

Hypothesis 6

Hypothesis 6

There will be no significant difference in the Puerto Rican children's performance on the EIWN-R and the teacher's estimate of their ability as measured by the cumulative grade average for the year.

In order to determine whether there was a relation between the performance of the students in the Escala de Inteligencia Wechsler para Niños Revisada and the teacher's estimate of their ability as measured by the cumulative grade point average for the year a correlation coefficient and a rank correlation were computed. Results are presented in Tables 8 A and 8 B.
### Table 8 A

**CORRELATION BETWEEN PUERTO RICAN SECOND GRADE CHILDREN'S PERFORMANCE ON THE ESCALA DE INTELIGENCIA WECHSLER PARA NIÑOS- REVISADA AND THE TEACHER'S RATING OF THEIR ACADEMIC PERFORMANCE**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>r</th>
<th>t</th>
<th>df</th>
<th>t prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGPA</td>
<td>30</td>
<td>3.46</td>
<td>.678</td>
<td>.669</td>
<td>4.77</td>
<td>28</td>
<td>.001</td>
</tr>
<tr>
<td>EIWN-R</td>
<td>30</td>
<td>110.77</td>
<td>15.72</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

n = 30

### Table 8 B

**RANK CORRELATION BETWEEN PUERTO RICAN SECOND GRADE CHILDREN'S PERFORMANCE ON THE ESCALA DE INTELIGENCIA WECHSLER PARA NIÑOS- REVISADA AND THE TEACHER'S RATING OF THEIR ACADEMIC PERFORMANCE**

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>M</th>
<th>SD</th>
<th>rho</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGPA</td>
<td>30</td>
<td>3.46</td>
<td>.678</td>
<td>.7702</td>
</tr>
<tr>
<td>EIWN-R</td>
<td>30</td>
<td>110.77</td>
<td>15.72</td>
<td></td>
</tr>
</tbody>
</table>

n = 30
Tables 8 A and 8 B present a summary of the correlation between Escala de Inteligencia Wechsler para Niños Revisada and the teacher's estimate of children performance as measured by the cumulative grade point average. It can be seen that there is a relationship between the children's performance on the EIWN-R and the cumulative grade point average. If children scored high on the EIWN-R indicating that they have a high level of intelligence they also got very high grades from the teachers. That is their academic performance was at the same level of their measured potential. This fact is confirmed by findings presented in Table 8 B which presents the rank correlation coefficient. Hypothesis 6 is supported by these findings.

Estimate of Reliability

Table 9

RELIABILITY COEFFICIENTS BETWEEN TEST SCORES OF SECOND GRADE PUERTO RICAN STUDENTS

<table>
<thead>
<tr>
<th></th>
<th>VERBAL</th>
<th>PERFORMANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIWN-R TOTAL</td>
<td>.945</td>
<td>.889</td>
</tr>
<tr>
<td>SEQUENTIAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>K-ABC MPC</td>
<td>.753</td>
<td>.913</td>
</tr>
</tbody>
</table>

n = 30

Table 9 presents how each of the individual research
sub test scores was related to the total score of the same test. These results can be compared to those presented in the test manuals. The WISC-R reports in its manual that the reliability coefficients are for the Verbal IQ .94, and for the Performance IQ .90. If we compare these results with those obtained in this research we notice that the reliability coefficients on the Verbal IQ in both results were the same. On the Performance IQ the reliability coefficient of the obtained data was slightly lower.

The K-ABC manual reports reliability coefficients of .89 for the Sequential Processing and .93 for the Simultaneous Processing and the Mental Processing Composite. If we compare these results with those obtained in this research we can notice that both are very similar in the Simultaneous Processing but that they differ in the Sequential Processing. These results will be discussed in Chapter V.
CHAPTER V

SUMMARY, DISCUSSION OF FINDINGS AND RECOMMENDATIONS

Summary

The purpose of this chapter is to compare and analyze the research findings of this research project with those of previous investigations discussed in Chapter II of this dissertation. The main objective is to determine whether there is a difference between the performance of second grade, Puerto Rican students on the Escala de Inteligencia Wechsler para Niños and the Kaufman Assessment Battery For Children in Spanish.

The researcher will also compare the findings of this research project with those conducted before in the United States. The possible use of the Kaufman Assessment Battery for Children in the assessment of Puerto Rican children in Spanish, both in Puerto Rico and the mainland will be discussed.

It is very difficult to determine, as it has been discussed throughout this research paper, whether a standardized test developed in one country can be used successfully in another country. Factors such as differences in language, culture, norms and others can affect the test results.

Given the particular relationship between Puerto Rico and the United States it is important that we analyze the effect of testing Puerto Rican children both on the island and on the mainland with tests developed in the United
States. The constant reversible migration patterns of the Puerto Ricans makes it important that we have valid and reliable instruments of assessment that can be used in English and Spanish with these students. In order to study the possible effect of these factors in testing several studies have been conducted with Puerto Rican students both on the island and on the mainland, many of the studies focused on intelligence testing.

One of the main purposes of conducting this research project was to determine if any differences existed between the Kaufman Assessment Battery for Children, a new test to measure intelligence and the Wechsler Intelligence Scale for Children-Revised in Spanish, which is one of the most commonly used instruments to measure intelligence, using a Puerto Rican sample on the island.

The sample used in this research study consisted of thirty (30) second graders from a town in the Southwest of the island. The sample consisted of 17 males and 13 females, between the ages of 7.00 to 9.00 years old. The sample was randomly selected from a total population of 123 second grade students from the school.

The students all had similar characteristics, they had never been in a special education class, had never been referred for a formal or informal evaluation for participation in a special education class. They had never participated in a Chapter I program. They were all entitled to receive free lunch in school (which means that all parents earned
less than stipulated by the U.S. Department of Education to pay for their lunch).

In order to select the project's sample the school principal assigned the social worker to identify the students that met the established participation criteria. After the students were identified a letter was sent home (see appendix D) explaining to parents the purpose of this research, the implications for allowing their children to participate in such project and requesting them to return the written permission slip for the children to participate in the study. A total of fifty (50) children were identified as possible candidates to participate in the study and letters were sent home.

Of the fifty (50) letters that were sent to parents, forty five (45) parents returned the permission form, out of which thirty (30) were randomly selected. The following procedure was used to select participants. The names of all children whose parents returned the permission slip were scrambled in a container, out of which the social worker pulled the first thirty (30) names. The researcher did not participate in the selection process of the sample to guarantee that the sample was representative of the second graders of this school.

Data gathering was conducted adhering strictly to the procedures established in the corresponding test manuals. The examiner was provided with a testing room that was located in a quiet section of the school building. The room
was well ventilated, there was enough light and privacy to conduct the testing. It contained a large table with chairs that were appropriate for the children's age group.

The examiner was given support from teachers, parents, and school administrator to conduct the study. The children were escorted to the testing room by the examiner, he was introduced to the children by their teachers in order to establish rapport. Standard test administration procedures were strictly followed.

DISCUSSION OF FINDINGS

As presented in Chapter II of this research paper one of the first psychologists in Puerto Rico to study the effect of using tests developed in the United States with Puerto Rican students was Roca. Roca reported in 1955, after translating the Wechsler Intelligence Scale for Children in Spanish that the WISC Full Scale mean IQ for the sample he studied was 88.01 and the standard deviation was 21.60. These findings are clearly lower than those reported on the test manual. It is important to notice that Roca translated the Wechsler Intelligence Scale for Children in Spanish but that he used the same norms as the original test in English. The Puerto Rican population was compared to the test norms and they were not part of the norms.

Prewitt-Diaz and Muñoz in 1984 collected data for new norms for the WISC in Puerto Rico. Their sample consisted of 100 students equally divided between males and females between the ages of 5 and 15 years old. In this research
they reported a mean score of 109.9 and a standard deviation of 14.56. These results are closer to the norms reported in the test manual than those reported by Roca (1955).

After the Wechsler Intelligence Scale for Children Revised was translated into Spanish Prewitt-Diaz, Rodriguez and Rivera-Ruiz (1986) tried to determine whether this new translation was a reliable instrument for use in Puerto Rico. Their sample consisted of 51 children ages 10.5 to 13.1 years old, 23 males and 28 females from a town in the Central Mountain Region of Puerto Rico. They reported a Full IQ mean of 91.8 with a standard deviation of 14.5. If we compare these findings with those of Roca (1955), we can conclude that Prewitt et al findings are closer to the total IQ mean reported in the manual.

If we compare the test results of the Escala de Inteligencia Wechsler para Niños- Revisada from this research paper with those of Roca (1955), Prewitt-Diaz & Muñoz (1984) and those of Prewitt-Diaz et al (1986) we can conclude that they are very similar to those reported by Prewitt-Diaz & Muñoz (1984). We can also notice that they are higher than those reported on the test manual. The Wechsler Intelligence Scale for Children-Revised manual reports a Full Scale IQ of 100 and a standard deviation of 15, in this research project the Full Scale IQ mean is 110.77 and the standard deviation is 15.34.

It is very important that we examine the possible explanations for these differences. A possible explanation
for these differences can be obtained when we examine the differences in samples. The sample used in this project was different from those used in previous studies. After a careful analysis of the participation criteria described in Chapter III where more children from the academically advanced classes participated in the study and less children from the academically slower groups were included, it can be inferred that the scores obtained by the children were higher, if they were from the academically advanced groups. This was not the case in the normalization process of the Wechsler Intelligence Test for Children- Revised.

The use of the Kaufman Assessment Battery for Children is relatively new one, it was published in 1983. In Puerto Rico its use is even newer. There are no published studies about the use of the Kaufman Assessment Battery for Children using a Puerto Rican sample.

The K-ABC manual reports a Mental Processing Composite IQ of 100 and a standard deviation of 15. The obtained Mental Processing Composite IQ of this research project yielded a score of 102.37 and a standard deviation of 15.34. This scores are very close to those reported on the test manual. After examining these results it can be concluded that they are closer to those reported on the test manual than the one's obtained in the Escala de Inteligencia Wechsler para Niños- Revisada that were higher. As it was mentioned earlier there is no other data to compare the results of this
If we compare these research findings with those of Zins and Barnett (1984); Naglieri (1984); Naglieri (1985) and Klanderman, Devine and Mollener (1985) who studied the validity of using the K-ABC with a non referred sample in the United States it will give us an idea of how they performed in comparison with these other studies. The sample used in this project is also non referred. Before we begin to compare the results of this research with those listed above and others it is important to keep in mind the linguistic and cultural differences of the samples.

Zins and Barnett (1984) studied the relationship of the K-ABC to the Stanford Binet and the WISC-R. They used forty (40) neighborhood kids, that ranged in ages from 6 to 12. The requirement to participate in the study was that they did not have any known cognitive or emotional difficulty. They reported that both the WISC-R Full Scale IQ and the Stanford Binet Scores were higher than the K-ABC Mental Processing Composite Score, although only the WISC-R Full Scale IQ score reached statistical difference.

These findings are similar to the one's in this research paper. The WISC-R Full Scale IQ score of the sample studied was 110.77 and the K-ABC MPC was 102.37. Zins and Barnett report a WISC-R Full Scale IQ of 117.11 and a S.D. of 14.72, on the K-ABC they report an MPC of 112.03 with a S.D. of 14.28. They report a correlation coefficient of .79
which was significant at the .001 level. In this research the correlation coefficient was .686 which was significant at the .05 level. It can be inferred from these two studies that the K-ABC MPC and the WISC-R total IQ scores are correlated to a relatively high degree. Zins and Barnett claim that even though they appear to be highly correlated the Full Scale IQ and the MPC are not directly comparable to each other.

As we compare the results of this research project with those of Naglieri (1984) where he used a Navajo sample to compare the results of the K-ABC to the WISC-R and the PIAT we find that even though there are some similarities between the samples there are also differences. Both samples are minorities whose primary language is not English. The Navajo sample was tested in English where as the sample in Puerto Rico was tested in Spanish, which is their native language. Both samples are culturally different from the sample used to validate the tests that were used.

The Navajo sample had a Full IQ Scale Score mean of 86.9 on the WISC-R and a K-ABC CPM Mean of 95.0 which he found to be significant. All of the WISC-R and K-ABC scores correlated significantly. These findings are different to the ones reported on this research project. The Puerto Rican sample scored higher than the Navajo sample on both the WISC-R and the K-ABC, in contrast to the Navajo sample the Puerto Rican sample did better on the WISC-R than on the K-ABC.
Naglieri reported that the Navajo sample performed lower on the Verbal subscale of the WISC-R since their main language was not English. Since the children did better on the K-ABC than on the WISC-R he concluded that this would be a better measure of intelligence when used with language minorities.

In the case of the Puerto Rican sample presented in the research presented here, the subjects did better on the WISC-R than on the K-ABC. The difference on this two studies might be that the main language used to assess the Puerto Rican sample was Spanish which is their main language, where as the Navajo sample was tested in English. The Navajo sample had the disadvantage of both language and the cultural differences.

In another study conducted by Naglieri (1985) he examined the relationship between the McCarthy Scales of Children's Ability and the K-ABC using a non referred sample. He reported that there was a non significant difference between the McCarthy Scales and the K-ABC. The children obtained a McCarthy GCI of 101 and a K-ABC MPC of 102. The K-ABC MPC of this sample is very similar to the one obtained by the studied Puerto Rican sample which was 102.37.

In 1985 Klanderman, Devine and Mollner investigated whether the K-ABC measures the same constructs as the WISC-R and the Stanford Binet. They used a sample of 41 second, third and fourth graders. They reported that the MPC IQ of the K-ABC was about one standard deviation above the mean,
and that the results of the WISC-R and the Stanford Binet were in the same direction as the K-ABC, that is above the mean. In the case of the sample we are reporting the children scored close to one standard deviation above the mean in the EIWN-R but very close to the mean on the K-ABC.

As it was hypothesized in this research project using a Puerto Rican sample, there was no difference in the performance of males and females in the total IQ score of the Escala de Inteligencia Wechsler para Niños- Revisada. The males obtained a mean score of 110.06 with a standard deviation of 17.45, females obtained a mean total IQ score of 111.69 with a standard deviation of 13.07 (Table 2). In order to determine whether there was a significant difference between the means a t test was computed. A t value of -.212 was obtained, the null hypothesis was accepted because there was no significant difference between the scores obtained by males and those obtained by the females. These findings are congruent with those reported on the WISC-R Manual, 1974.

It was very important to determine if any differences in performance between the students in this sample was determined by sex differences, or if like the results reported on the test manual the test does not discriminate by sex.

There was no significant difference between the performance of males and females in the Kaufman Assessment Battery for Children. In the K-ABC the males obtained a mean score of 102.94 and a standard deviation of 16.60 on the Mental Processing Composite. Female students obtained a mean of
101.62 with a standard deviation of 13.47 on the Mental Processing Composite (Table 3). These findings are also congruent with those reported in the interpretive manual of the Kaufman Assessment Battery for Children (1983).

Based upon the findings reported previously it appears that any differences in the findings of this research project are not due to differences in the performance of males and females. Both males and females seem to perform equally well, there is no significant difference between their performances.

It is important that we also compare the intercorrelations of the K-ABC and the EIWN-R in this research project and others. A summary of the intercorrelations between the EIWN-R and the K-ABC and the sample reported in this research paper are presented in Table 5.

Zins & Barnett (1984) also present data where they analyze the correlation between the K-ABC and the WISC-R. These findings will be compared to the findings reported in this research project.

The correlation coefficients of the Puerto Rican sample were as follows, the correlation between the WISC-R Verbal IQ and the K-ABC Sequential IQ was .52 and it was found to be significant at the .001 level. The correlation between WISC-R Performance IQ and K-ABC Sequential IQ was .44 and it was found to be significant at the .01 level. The correlation between the WISC-R Performance IQ and K-ABC Simultaneous IQ was .57 and it was significant at the .37
level. A correlation of .62 significant at the .05 level was found between WISC-R Verbal IQ and K-ABC Simultaneous IQ.

In the study conducted by Zins & Barnett (1984) they reported an intercorrelation between the WISC-R Verbal IQ and the K-ABC Sequential IQ of .54 that was significant at the .001 level. The correlation between Performance IQ and the Simultaneous IQ was .65 and it was found to be significant at the .001 level. The correlation between Verbal IQ and Simultaneous IQ was found to be .63 also significant at the .001 level. The correlation between Performance IQ and Sequential IQ was .40 which was significant at the .05 level.

When we compare Zins & Barnett's sample with the Puerto Rican sample we can notice that the correlation between Verbal IQ and Sequential IQ is very similar and both are significant at the same level. They are also similar in other correlations although the significance level might be different as is the case with Verbal IQ and Simultaneous IQ and between Performance IQ and Sequential IQ.

There is a difference between the correlation obtained with the Puerto Rican sample on Wechsler Intelligence Scale for Children- Revised Performance IQ and Kaufman Assessment Battery for Children Simultaneous IQ which was not found to be significant in this research project but was found to be significant in the Zins et al study.
After analyzing the correlations between the subtests of the Escala de Inteligencia Wechsler para Niños-Revisada and the Kaufman Assessment Battery for Children in Spanish it is important that we compare the differences between the total scores of both tests. This analysis will give us an idea of how the tests relate to each other (Table 6A & 6B). The correlation coefficient of the research sample is .686, which is similar to the one reported on the K-ABC manual of .70 with a normal sample. It appears that the K-ABC and the EIWN-R are related and it can also be assumed that both measure the same factor of general intelligence. It is important to notice that the K-ABC yields a lower score than the WISC-R. Reynolds and Kamphaus (1987) explain this difference based upon the fact that the K-ABC was normed a decade after the WISC-R and that this difference was expected. They claim that the difference in performance is due to differences in the sample used for the normalization of the Kaufman Assessment Battery Test and not for differences in what they measure. A similar case happened when the Wechsler Intelligence Scale for Children was Revised, it yielded a lower IQ than the original Wechsler Intelligence Scale for Children. Thus it can be concluded that the K-ABC will yield a lower IQ score than the WISC-R which was normed more than 10 years ago and it should be similar to the new revision of the Stanford Binet.

One of the uses of intelligence tests is to predict future achievement. It is then important that we discuss if
there are any differences between the tests studied in this research in predicting children's performance compared to the teacher's estimate of performance, that is do they predict academic achievement with the same accuracy. As we compare the teacher's estimate of performance with the estimates obtained in both the Escala de Inteligencia Wechsler para Niños-Revisada (WISC-R) and the Kaufman Assessment Battery for Children in Spanish (Tables 7 and 8) we can conclude that there is a positive correlation between the obtained test scores and the teacher's estimate of performance. This is confirmed by the rank correlation coefficient which are presented in Tables 7 A and 8 A, according to these rank correlation coefficients there is strong positive correlation between the variables studied.

It can be concluded based upon the findings reported in Tables 7, 7 A, 8 and 8 A, that the Escala de Inteligencia Wechsler para Niños and the Kaufman Assessment Battery for Children correlate positively with the teacher's estimate of performance. This correlation is a strong one and it implies that the tests and teachers are discriminating between the students.

In order to determine how each sub test score is related to the total test score a reliability coefficient was obtained (Table 9). As we can see in Table 9, the reliability coefficients between Verbal Sub scale score and the EIWN-R total score is .945 which is very similar to that reported on the WISC-R manual of .94. The Performance Sub
Scale score reliability coefficient is .889 and the one reported in the manual is .90, the obtained coefficient is slightly lower.

The Kaufman Assessment Battery for Children reports a reliability coefficient of .89 for the Sequential Processing Sub scale score and .93 for the Simultaneous Processing Sub scale score. If we compare these coefficients with those reported on this research paper we can notice that they are very similar in the Simultaneous Processing Sub scale score and different in the Sequential Processing Sub scale score.

**Recommendations for practitioners**

After a careful examination of the data presented it seems to suggest that the Kaufman Assessment Battery for Children in Spanish can be used very effectively in assessing Puerto Rican children in Puerto Rico since it correlates positively with the Escala de Inteligencia Wechsler para Niños-Revisada which is one of the most used instruments to measure intelligence on the island.

It can also be concluded that the Kaufman Assessment Battery for Children is as good as the Wechsler Intelligence Scale for Children- Revised in predicting school achievement as measured by the teachers' estimate of performance. Then we can conclude that based upon these findings we can consider the Kaufman Assessment Battery for Children in Spanish when we assess Puerto Rican children in Puerto Rico. Comparatively speaking, the Kaufman Assessment Battery for Chil-
dren appears to be a valid and reliable instrument to measure intelligence.

**Recommendations for research**

Since the Kaufman Assessment Battery for Children is a relatively new intelligence test it is important to study how the K-ABC can be used to successfully assess Puerto Rican children both on the island and on the mainland. It is recommended that further research be done in using the Kaufman Assessment for Children in Spanish for other age groups both on the island and on the mainland.

It is also important to develop norms for Puerto Rican children in Puerto Rico. The Escala Wechsler de Inteligencia para Niños-Revisada is currently being normed by Leticia Herrans in the University of Puerto Rico and should be available for publication soon. It is also very important to develop norms for the Puerto Rican population in the United States, we know that according to the census this population is increasing and development of norms for this population would be useful. This would have an important impact on the assessment of children for possible special education placement.

As it has been discussed throughout this research paper, given the particular relationship of Puerto Rico and the United States and the mobility of its people between the mainland and the island, it is important that we gather as much information about the use of intelligence tests with
these students. Due to the mobility of people, children can spend most of their school life traveling between the schools in the States and schools in Puerto Rico. This situation creates a condition where assessing these children consistently is important.

We can encounter a problem situation where a child needs to be assessed in the United States and his primary language is Spanish and the opposite can be the case in Puerto Rico, where the child needs to be assessed in English. We need to have tests that can be used in both places, Puerto Rico and the Mainland and whose translations are valid and reliable.

In order to further determine whether the Kaufman Assessment Battery for Children can be used to predict academic achievement it is recommended that a study comparing the test results of Puerto Rican children either in Puerto Rico or the United States with the results of standardized achievement tests be conducted. These tests should include reading and mathematics scores. This research will give us the opportunity to study whether the K-ABC correlates with the standard tests of achievement.

It is very important that we investigate which are the most valid and reliable instruments to assess intelligence, since these instruments play a very important role in making decisions for placement in special education classes and in classes for the gifted and talented.
It is also urgent and important that we train personnel in the use of new tests that are being developed in the United States and in other countries. Special emphasis should be given in the training of bilingual psychologists who can assess the needs of bilingual children on the mainland.
APENDICES
Estimada Sra. Aponte:

Respetuosamente solicito su autorización para utilizar alumnos del segundo grado de las escuelas de Sabana Grande para el estudio de mi tesis doctoral. En la actualidad me encuentro terminando los requisitos del grado doctoral en psicología "Counseling Psychology" en la Universidad de Massachusetts en Amherst. Actualmente resido en Sabana Grande y enseño a jornada parcial en el Departamento de Estudios Graduados en Psicología de la Universidad Interamericana de Puerto Rico, Recinto de San Germán.

Estoy en el proceso de comenzar a recopilar los datos para mi tesis, cuyo tema es comparar los resultados obtenidos por los estudiantes puertorriqueños de segundo grado en dos exámenes de inteligencia, la Escala Wechsler de Inteligencia para Niños- Revisada y el "Kaufman Assessment Battery for Children", (traducido).

Los exámenes serán administrados por mí o por uno de los estudiantes del programa graduado en psicología de la Universidad Interamericana de Puerto Rico bajo mi supervisión. Los costos de los exámenes y materiales serán responsabilidad totalmente mía. La muestra que me propongo estudiar es de cuarenta niños, que no hayan sido referidos para evaluación psicológica por ninguno de sus maestros. La anonimidad de los estudiantes esta garantizada y se seguirán los principios éticos en el uso de sujetos en investigación del American Psychological Association. El investigador solicitará autorización escrita a los padres de los niños para que participen en el estudio. Los datos recopilados sólo serán utilizados para los propósitos enumerados en la propuesta de tesis.

Espero que como resultado de mi investigación podamos comenzar a buscar un mejor instrumento para la evaluación de los niños de Puerto Rico.
En caso de duda sobre lo que me propongo hacer favor de comunicarse conmigo al teléfono 873-0620. Muchas gracias por su atención.

Muy atentamente,

César D. Vázquez Pietri
Apartado 201
Sabana Grande, P.R. 00747
CARTA CIRCULAR NUM. 5-85-86

A : Subsecretario, Secretarios Auxiliares, Directores de Programas o Divisiones, Directores Regionales, Supervisores Generales, Superintendentes de Escuelas, Directores de Escuelas, Decanos de Colegios de Pedagogía y Directores de Agencias Gubernamentales

Asunto : PROCEDIMIENTO PARA RADICAR LA SOLICITUD DE ESTUDIOS E INVESTIGACIONES EN EL SISTEMA EDUCATIVO

Señor y señora:

El Departamento de Instrucción Pública recibe continuamente solicitudes individuales, de las instituciones universitarias y las agencias gubernamentales, para llevar a cabo estudios e investigaciones, relacionadas con el Sistema Educativo, en los distritos escolares, regiones educativas, y la Oficina Central.

Para facilitar el trámite de estas solicitudes, establecemos las siguientes directrices:

1. Toda persona interesada en efectuar un estudio, o investigación, en torno al Sistema Educativo, debe llenar el formulario: Solicitud de autorización para llevar a cabo estudios e investigaciones en el Sistema Educativo.

2. La solicitud debe radicarse, por lo menos, con cuatro (4) semanas de anticipación a la fecha en que se iniciará el estudio, o investigación, en la División de Investigación e Innovaciones Educativas, Área de Planificación y Desarrollo Educativo, Oficina 504, Edificio Rivera, Avenida Teniente César González, Esq. Calle Calaf, Hato Rey, Puerto Rico 00919.
3. Toda solicitud debe cumplir con los siguientes requisitos para ser autorizada:

- El estudio, o investigación, debe responder a un problema previamente identificado en el Sistema.

- El estudio, o investigación, debe atender un problema no estudiado anteriormente; a menos que se determine que el estudio, o investigación, original carece de relevancia actual, o se intente validar los resultados de un estudio, o investigación realizado.

- El estudio, o investigación, debe incluir un resumen de la propuesta final y los instrumentos a utilizarse.

- La solicitud de estudio, o investigación, debe tener el visto bueno del asesor, consejero, director, o jefe inmediato del solicitante y firmada por éste último en la parte inferior.

4. El formulario de solicitud de estudio, o investigación, está disponible en las oficinas de: los Directores Regionales, Superintendentes de Escuelas, División de Investigación e Innovaciones Educativas, del Departamento de Instrucción Pública, y en la Oficina de los Decanos de los Colegios de Pedagogía de las universidades y colegios.

Una vez que la solicitud se haya recibido en la División de Investigación e Innovaciones Educativas, se analizará debidamente y se le dará curso a tono con el procedimiento establecido.

Esta Carta Circular deroga la Carta Circular Núm. 1-83-84, del 1 de julio de 1983 y cualquier otra directriz que esté en conflicto, en su totalidad o en parte, con las disposiciones aquí establecidas.

Cordialmente,

Awilda Aponte Roque
Secretaria de Instrucción Pública
SOLICITUD DE AUTORIZACIÓN PARA LLEVAR A CABO
ESTUDIOS E INVESTIGACIONES EN EL SISTEMA EDUCATIVO

3 de febrero de 1987


2. Breve explicación sobre el problema: Comparar los resultados en estos dos exámenes de inteligencia de niños del segundo grado, para determinar validez concurrente y predictiva.

3. Explique el procedimiento (distrito, escuelas, muestra e instrumentos a utilizar): El distrito escolar en que me gustaría realizar el estudio sería el de Sabana Grande, la muestra es de 40 niños del segundo grado, los instrumentos, W.I.T. y el K-ABC.

4. Indique el tiempo que le tomará realizar el estudio, o investigación:

El tiempo requerido sería aproximadamente 2 años.

5. Importancia y utilidad del estudio, o investigación, para el Sistema Educativo: Considero que el estudio nos permitirá determinar si la nueva prueba de inteligencia Kaufman Assessment Battery for Children podría ser utilizada para la evaluación psicológica de nuestros niños.

6. Nombre del Solicitante: César D. Vázquez Pietri

7. Lugar donde trabaja, o estudia: University of Massachusetts / Amherst

8. Dirección postal permanente: P.O. Box 201 Sabana Grande, P.R. 00747

9. Dirección residencial permanente: Ruyoz Rivera 127 Sabana Grande, P.R.

10. Teléfono: 873-0620

Residencia

Trabajo

Colegio, o Universidad

Firma del Consejero, Auspiciador, o Jefe inmediato del Solicitante

Yo, César D. Vázquez Pietri, me comprometo entregar a la División de Investigación e Innovaciones Educativas, una copia del INFORME FINAL DEL ESTUDIO, O INVESTIGACIÓN, que realice en el Sistema Educativo.

Recibida por: Director, División de Investigación e Innovaciones Educativas
M E M O R A N D O

A : Sr. Brackley Rivera Sánchez, Director
Región Educativa de Mayagüez,
Superintendente de Escuelas y
Directores de Escuela

De : Sara Lópezc
Secretaria Auxiliar
Area de Planificación
y Desarrollo Educativo

Asunto : AUTORIZACION PARA LLEVAR A CABO
ESTUDIOS EN EL SISTEMA EDUCATIVO

El Sr. César D. Vázquez Pietri, quien cursa estudios conduce ntes al grado doctoral en la Universidad de Massachusetts, en Amherst, realizará un estudio sobre el siguiente tema: "A comparison of Puerto Rican children's performance on the Spanish version of the Wechsler Intelligence Test for children (revised) and the Kaufman Assessment battery for children (K-ABC)", en el Distrito Escolar de Sabana Grande.

El señor Vázquez Pietri está autorizado a visitar las escuelas del Distrito Escolar antes mencionado, con el propósito de administrar una prueba a una muestra seleccionada de estudiantes. Deberá coordinar las visitas con el Director Regional, Superintendente de Escuelas y Directores de Escuela.

Esperamos que se le brinde al señor Vázquez Pietri toda la colaboración necesaria para que pueda realizar su estudio.

El Departamento de Instrucción Pública no se solidariza necesariamente con las opiniones, o preferencias que pudieran surgir por razón de tal estudio.

El Departamento de Instrucción Pública no discrimina por razón de raza, color, sexo, nacimiento, origen nacional, condición social, ideología política o religiosa, edad o impedimento en sus actividades, servicios educativos y oportunidades de empleo.
27 de marzo de 1987

Estimado padre o encargado:

Por este medio solicito me permita administrar las siguientes pruebas a su hijo(a):

1. Escala Wechsler de Inteligencia para Niños Revisada
2. Escala Kaufman de Inteligencia para Niños

como parte de la recopilación de datos para mi tesis doctoral en la Universidad de Massachusetts. Ambas escalas son pruebas diseñadas para medir la inteligencia de los niños norteamericanos. El propósito de mi investigación es comparar los resultados obtenidos por nuestros niños en ambas pruebas.

Deseo asegurarle que estos resultados no serán divulgados y que se mantendrá la mas estricta confidencialidad. Esto es, ninguno de los resultados obtenidos podrán ser utilizados para otro propósito sino el especificado. De usted tener interés en conocer los resultados estoy en la mejor disposición de reunirme con usted para discutirlos. Si usted autoriza a su hijo(a) a participar en el estudio favor de devolver el permiso a la mayor brevedad posible a su maestra.

Muchas gracias por su cooperación y ayuda.

Muy atentamente,

César D. Vázquez

.................................................................

Fecha ______________________

Por la presente autorizo a mi hijo(a)
ha ser examinado por César D. Vázquez y/o Estudiantes Graduados con el propósito de recopilar datos para la tesis doctoral del Sr. Vázquez según expuesto anteriormente.

Atentamente,

Padre o encargado


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