

## INFORMATION TO USERS

The most advanced technology has been used to photograph and reproduce this manuscript from the microfilm master. UMI films the original text directly from the copy submitted. Thus, some dissertation copies are in typewriter face, while others may be from a computer printer.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyrighted material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each oversize page is available as one exposure on a standard 35 mm slide or as a 17" × 23" black and white photographic print for an additional charge.

Photographs included in the original manuscript have been reproduced xerographically in this copy. 35 mm slides or 6" × 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.



Accessing the World's Information since 1938

300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA



**Order Number 8821106**

**The relationship between family-environmental processes and  
academic achievement among three Hispanic groups in the  
United States**

**Martinez-Pons, Manuel, Ph.D.  
City University of New York, 1988**

**Copyright ©1988 by Martinez-Pons, Manuel. All rights reserved.**

**U·M·I**  
300 N. Zeeb Rd.  
Ann Arbor, MI 48106



**PLEASE NOTE:**

In all cases this material has been filmed in the best possible way from the available copy. Problems encountered with this document have been identified here with a check mark .

1. Glossy photographs or pages \_\_\_\_\_
2. Colored illustrations, paper or print \_\_\_\_\_
3. Photographs with dark background \_\_\_\_\_
4. Illustrations are poor copy \_\_\_\_\_
5. Pages with black marks, not original copy \_\_\_\_\_
6. Print shows through as there is text on both sides of page \_\_\_\_\_
7. Indistinct, broken or small print on several pages
8. Print exceeds margin requirements \_\_\_\_\_
9. Tightly bound copy with print lost in spine \_\_\_\_\_
10. Computer printout pages with indistinct print \_\_\_\_\_
11. Page(s) \_\_\_\_\_ lacking when material received, and not available from school or author.
12. Page(s) \_\_\_\_\_ seem to be missing in numbering only as text follows.
13. Two pages numbered \_\_\_\_\_. Text follows.
14. Curling and wrinkled pages \_\_\_\_\_
15. Dissertation contains pages with print at a slant, filmed as received \_\_\_\_\_
16. Other \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**U·M·I**



THE RELATIONSHIP BETWEEN FAMILY-ENVIRONMENTAL  
PROCESSES AND ACADEMIC ACHIEVEMENT  
AMONG THREE HISPANIC GROUPS IN  
THE UNITED STATES

by

MANUEL MARTINEZ-PONS

A dissertation submitted to the Graduate Faculty in  
Educational Psychology in partial fulfillment of the  
requirements for the degree of Doctor of Philosophy,  
the City University of New York.

1988

1988

MANUEL MARTINEZ-PONS

All Rights Reserved

This manuscript has been read and accepted for the Graduate Faculty in Educational Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

May 1, 1988  
Date

Barry J. Zimmerman  
Chair of Examining Committee

May 2, 1988  
Date

Carol Tek TWA  
Executive Officer

Barry J. Zimmerman

---

Shirley Feldmann

---

David Rindskopf

---

Supervisory Committee

The City University of New York

Abstract

THE RELATIONSHIP BETWEEN FAMILY-ENVIRONMENTAL  
PROCESSES AND ACADEMIC ACHIEVEMENT  
AMONG THREE HISPANIC GROUPS IN  
THE UNITED STATES

by

MANUEL MARTINEZ-PONS

Advisor: Professor Barry J. Zimmerman

The purpose of this study was to examine 1) whether differences in academic achievement exist among students of three Hispanic groups in the United States, 2) whether such differences are related to student achievement processes, and 3) whether differences in both student academic achievement and achievement processes are related to their parents' background characteristics.

The three Hispanic groups of students that were studied were Puerto Rican, Cuban, and Central/South American. Two student achievement processes were examined: their time spent on homework and their educational-occupational aspirations. The three parental achievement processes investigated were their

press for English, press for independence and educational-occupational aspirations for their child. Finally, two background characteristics of the parents were studied: their time residing in the United States and their level of academic attainment. The model that guided this investigation was developed from Marjoribanks' (1976) Social-Environmental theory and was tested using path analysis procedures.

It was found that the proposed family environmental model could explain 56 percent of the variance in the students' Reading achievement and 59 percent of the variance in their Mathematics achievement. The results showed that paternal achievement processes played a larger role than maternal processes in the academic achievement of these Hispanic students. In addition, it was found that these students' educational-occupational aspirations were related to their academic achievement, and that their homework time was affected by their educational and occupational aspirations. In comparisons among the three Hispanic groups, Cuban fathers displayed significantly higher levels of press for English,

press for independence and educational-occupational aspirations than Central/South American fathers. The latter fathers in turn showed higher levels of each of these three family processes than Puerto Rican fathers.

The results were interpreted as supportive of the Social-Environmental view of academic achievement and as indicative of important differences in family achievement processes among the three Hispanic groups that were studied. Educational implications for remediation programs were discussed.

## ACKNOWLEDGEMENTS

I want to express my gratitude to Dr. Barry J. Zimmerman for his dedicated guidance, support and inspiration in the writing of this dissertation. I want to thank the other members of my dissertation committee, Dr. Shirley Feldmann and Dr. David Rindskopf, who made many important suggestions and recommendations; and to the dissertation's outside readers, Dr. Zita Cantwell and Dr. Bert Flugman for their helpful comments.

TABLE OF CONTENTS

ABSTRACT . . . . . iv  
ACKNOWLEDGEMENTS . . . . . vii  
LIST OF TABLES . . . . . x  
LIST OF FIGURES . . . . . xii

CHAPTER

I. INTRODUCTION . . . . . 1  
    Introductory Statement . . . . . 1  
    General Purpose of the Study . . . . . 11  
    Justification for the Study . . . . . 12

II. REVIEW OF THE LITERATURE . . . . . 14  
    Theoretical Background . . . . . 14  
    Theoretical Scope of the Present Study . . . . . 52  
    Previous Findings on U. S. Hispanics  
        Related to Aspects of the Present Study . . . . . 55

III. STATEMENT OF RESEARCH QUESTIONS AND  
    HYPOTHESES . . . . . 69

IV.	METHODS AND PROCEDURES . . . . .	71
	Description of Sample . . . . .	71
	Measures and Instrumentation . . . . .	71
	Procedure . . . . .	74
	Method of Data Analysis . . . . .	74
V.	RESULTS OF THE INVESTIGATION . . . . .	78
	Results Related to Research Questions	
	I Through III . . . . .	78
	Results Related to Research Questions	
	IV and V . . . . .	89
VI.	DISCUSSION OF RESEARCH FINDINGS . . . . .	96
	Analysis and Interpretation of Results . . . . .	96
	Summary . . . . .	100
	Implications of the Research Findings . . . . .	101
	Implications for Program Development . . . . .	102
VII.	APPENDIX: Family Interview Schedule (FIS) . . . . .	104
VIII.	REFERENCES . . . . .	116

LIST OF TABLES

Table

1. Summary of Socio-Economic Status of U.S. Hispanic Groups . . . . .	7
2. Typology of Family Environments . . . . .	34
3. Ethclass Matrix . . . . .	37
4. TFE Quantification Scheme . . . . .	46
5. TFE Category Assignments of Australian Ethnic Groups . . . . .	47
6. Group Rank Correlations Between SES, TFE Scores and School Achievement Measures . . . . .	49
7. Percent Distribution of Length of Residence of Mother by Group . . . . .	63
8. Distributions of SES, Spanish Home Usage, and Student Educational Aspirations . . . . .	64
9. Mean Grade Equivalence on Mathematics, Reading and Vocabulary by Group . . . . .	65
10. Gender Breakdown for the Three Hispanic Groups . . . . .	72
11. Means and Standard Deviations of Student Variables for the Hispanic Groups Separately and Combined . . . . .	79
12. Means and Standard Deviations of Father Variables for the Hispanic Groups Separately and Combined . . . . .	80

13. Means and Standard Deviations of Mother Variables for the Hispanic Groups Separately and Combined . . . . .	81
14. Analysis of Variance F Statistics for Ethnicity and Educational Level . . . . .	92

LIST OF FIGURES

Figure

1.	Spearman Rank Correlation Coefficients Among Family SES and Children's Academic Status for the Major Hispanic Groups in the U.S. . . .	9
2.	The Polygenic Model . . . . .	16
3.	The Psychoenvironmental Model . . . . .	20
4.	Relationship Between the Child's Life-Space, his Intelligence Level and Attitudes Toward School and his Academic Achievement . . . .	28
5.	Marjoribanks' Limited Model . . . . .	30
6.	Theoretical Structure of the Present Study . .	56
7a.	Composite Model of HSBS Variables . . . . .	58
7b.	Pearson Correlations Among Key HSBS Variables .	59
8.	Path Model for the Study . . . . .	76
9.	Path Analysis Outcomes for Reading Achievement .	82
10.	Path Analysis Outcomes for Mathematics Achievement . . . . .	83

CHAPTER I  
INTRODUCTION

A matter of increasing concern to educators is a pattern of lowered levels of academic performance among many Hispanic students (Weinberg, 1977). In tests of reading, mathematics and general achievement, Mexican-American and Puerto Rican pupils score as much as one standard deviation below Anglo-Saxon students by the end of the 1st grade, and this gap has widened further by the 12th grade (Coleman, Hobson, McPartland, Mood, Weifeld & York, 1966, p. 21).

This developmental disparity is of concern to educators for two major reasons: a) the cost of remedial education in the U.S. is high. In 1981 alone, the money spent on programs for the educationally disadvantaged exceeded five billion dollars (U.S. Department of Education, 1982). A large portion of this money is increasingly being allocated to a growing U.S. Hispanic population, a population that now exceeds 15 million and is projected to reach 40 million within two decades (Jaffe, Cullen & Thomas, 1980). And b), evidence exists that past efforts at remediation have been largely unsuccessful in alleviating the problem. After two decades of remedial education, only about ten percent of the

variance in test scores can be associated with differences between schools. The major portion of the variance in achievement continues to be associated with individual differences among students (Carver, 1975). Thus, if the general success rate of efforts at remediation continues unchanged, academic underachievement among Hispanic pupils will continue to pose a drain on national resources, with little prospect for improvement.

It is clear, then, that a pressing problem regarding the academic achievement of Hispanic students exists, and that a fresh perspective needs to be taken to more effectively address it. Two questions may be posed as a first step toward gaining a better insight into the problem: 1) What are the reasons to the low success rate of past efforts at educational remediation? And 2) Are there other, more effective ways for improving the achievement of Hispanic students?

#### Reasons for the Low Success Rate of Past Efforts

Two related reasons have been suggested for the low success rate of past efforts to remediate academic underachievement among minority groups in general and Hispanic groups in particular: a) The manner in which the causes of underachievement have been defined and studied; and b) a tendency to view the various Hispanic groups in the

U.S. as a single, undifferentiated set.

The manner in Which the Causes of Underachievement Have Been Defined and Studied. The manner in which the relationship between key environmental variables and scholastic achievement has been examined "cannot be expected to throw much light on the processes that may be involved in the interactions" (Kellaghan, 1977, p. 754). Typically, such crude home environment variables as parental socioeconomic status have been used. However, Bloom (1964) and Fraser (1959) argued that the use of more refined measures dealing with culture and parent-child interactions could provide a better insight into the problem. Jensen (1968) also suggested that future attempts should look

... beyond crude socioeconomic variables to find the truly causal environmental influences on educability which are now thought to lie in more subtle psychological interactions during the child's development (p. 19).

Evidence of Interactions. Information gleaned from the Coleman Report supports the notion that school achievement patterns are influenced by interactions among subcultural variables-- and that, in many cases, these interactions

negatively affect Hispanic student performance. Such interactions can be seen in the case of home language usage: According to Coleman et al. (1966), children from Hispanic homes in which a language other than English is spoken perform lower than children from English-speaking homes when they enter first grade (p. 24). However, it is also clear that other subcultural factors interact with language usage to contribute to this problem. In grade one, on the General Information Tests (Coleman et al., 1966, p. 576) the average verbal score of Puerto Rican students in whose homes no English is spoken is 34, while for those in whose homes English is spoken it is 40. On the other hand, for Oriental-American students in whose homes no English is spoken the average score is 45, while for those in whose homes English is spoken it is 52. The same differences are found between Mexican-American students and Oriental-American pupils. Since, after language usage in the home has been accounted for, different levels of achievement remain for Oriental-Americans than for the two Hispanic groups examined, it is apparent that other factors operate in addition to home language usage to affect school achievement.

Thus, unique familial and other types of social factors clearly affect levels of scholastic achievement among Hispanic groups. But past failures to take such factors into

account have undoubtedly minimized the effectiveness of remediation efforts.

Failure to Differentiate Among Hispanic Groups. The second reason mentioned for the low success rate of past efforts at remediation involves a tendency for scientists and federal officials to classify Hispanic students into a single group, with little attempt to recognize those unique subgroup factors that may interfere with academic development. According to Jaffe, Cullen & Thomas (1980), legislation in the area of remedial education passed during the 60's, "...and the resulting judicial administration give the appearance that the Spanish-Americans are one group... with little or no differentiation" (p. 24).

Along these lines, the low level of academic achievement of the larger Hispanic groups in the U.S. (i. e., Mexican-Americans and Puerto Ricans), examined in the Coleman study, might be thought to apply to Hispanic groups in general, and allocation of resources for remediation would be made on the basis of the total U.S. Hispanic population. However, the foregoing considerations suggest that such an undifferentiated approach may be inappropriate. First, the educational achievement of other Hispanic groups (representing 17 different and socio-economically diverse nationalities) may

vary considerably from that of the two groups examined in the Coleman study (as already noted, it differs between the two groups examined). And second, even assuming similar achievement levels, the specific conditions underlying the level of achievement may differ from sub-group to sub-group.

Evidence of Differences Among Hispanic Groups. There is evidence in support of these notions. In an analysis of 1970 Census data, Jaffe et al. (1980) uncovered distinct and consistent differences in occupational level, family income and children's school status among the five major Hispanic groups in the U.S.: Mexican-Americans, Puerto Ricans, "Hispanos" (i. e., direct descendants of 15th century Spanish settlers in the southwest), Cubans and Central-and-South Americans. Table 1 summarizes these findings relative to the present issue.

In Table 1, Education consists of percentage of the adult population that has completed at least four years of college; Occupation is indicated in terms of Census-Bureau SES scores (the larger the score, the higher the occupational status); Family Income is the median for the year 1970; High School Retention refers to the percentage of persons between the ages of 15 and 18 remaining in high school; and School Progress refers to the percentage of primary-school pupils at least one grade level below the mode for their age group.

Table 1

## Summary of Socio-Economic Status of U.S. Hispanic Groups

Group	Education			Occupation			Family Income			H.S. Attendance			School Progress			H.S. Attendance/ School Progress	
	% Years	College	Ratio	Rank	Index	Ratio	Rank	Median	Ratio	Rank	%	Ratio	Rank	%	Ratio	Rank	Rank
White, Non-Hispanic	18.50	1.000	-	62	1.000	-	10,000	1.00	-	87	1.00	-	13	1.00	-	-	-
Mexican-American	3.00	.162	1	49	.790	1	6,690	.69	2	76	.87	2	24	2.85	1	1.5	
Puerto Rican	4.75	.256	2	53	.854	2	6,230	.62	1	68	.78	1	32	2.74	2	1.5	
Hispano	6.50	.351	3	56	.900	3	7,860	.78	3	82	.94	4	18	1.72	5	4.5	
Cuban	14.00	.760	4	57	.910	4	8,690	.86	4	77	.88	3	23	2.00	3	3.0	
Central/South American	19.25	1.040	5	58	.940	5	8,920	.88	5	83	.95	5	17	9.92	4	4.5	

Results are given for the White, non-Hispanic population as well as for the five Hispanic groups. The Hispanic group-to-Majority group comparative ratios are listed in addition to the raw scores. These scores are followed by the rankings of the Hispanic groups in terms of these ratios.

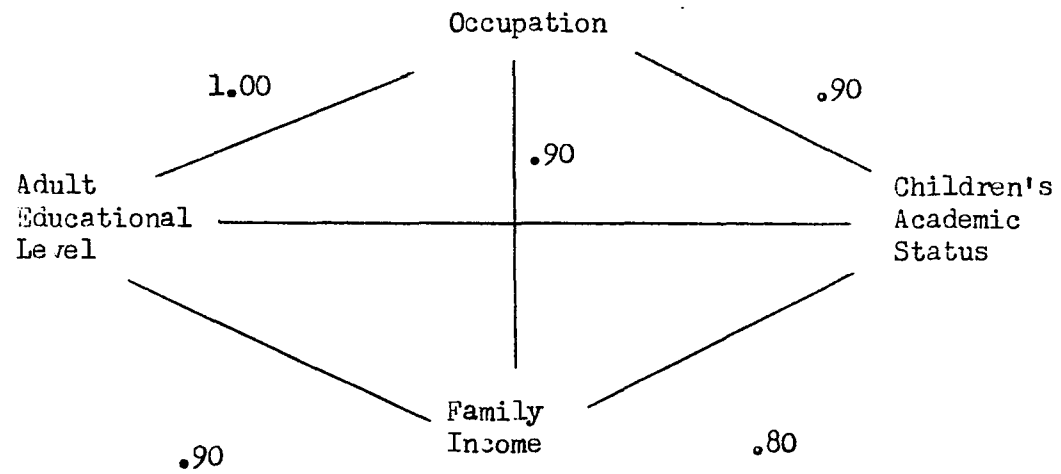
An examination of Table 1 reveals two striking features: First, in all cases, there exist wide-ranging differences between the Hispanic group-to-Majority group ratios. For example, in the case of Education, this ratio is .162 for Mexican-Americans and 1.04 for Central/South Americans. And second, the ordinal positions among the Hispanic groups are highly consistent from measure to measure.

The degree, as well as the sign of the relationship among the variables for the five Hispanic groups, is shown in Figure 1. Figure 1 depicts the Spearman rank correlation coefficients among the three variables of parents' education, occupation and income on the one hand; and the variable of school status, on the other. These correlations are based on the rank values appearing in Table 1.

The measures of school status reported by Jaffe et al. (1980) relate to proportion of secondary school-age pupils not attending school, and proportion of primary school-age pupils in grades below the norm. They do not relate to

Figure 1

Spearman Rank Correlation Coefficients Among Family SES and Children's Academic Status for the Major Hispanic Groups in the U.S.



actual academic performance in key subjects such as reading or mathematics. Nevertheless, since it is clear that a) the school variables are related to central SES variables, and b) the school variables and the SES variables are related to Hispanic-subgroup membership, it may be asked, Are traditional measures of key academic subjects also related to these social variables? It can further be asked, Do the same relationships exist between academic achievement and more specific measures of family-environmental processes?

It is apparent, then, that the various Hispanic groups in the U.S. differ in terms of SES and their children's academic status. Also, it appears that, due to differing social conditions, the factors that determine school achievement may vary across Hispanic subgroups.

#### Implications for Remediation.

These two observations have important implications for prevention and remediation of academic deficits among Hispanic students. First, if only certain subsets of the U.S. Hispanic population are found to be academically deficient, then economy of effort requires that only those groups be targeted for remediation. And second, an optimal effort requires that the specific set of conditions attending each subgroup afflicted be addressed.

These observations in turn have important implications

for developing a more focused approach to the problem of academic deficit among Hispanic groups in this country. This approach would involve a) specifically identifying those Hispanic subgroups suffering from academic deficit and b) for each subgroup identified , ascertaining the specific subgroup factors that underlie the deficiencies.

#### Implications for Research

Since this approach is based on the assumption that differing sub-group conditions within the Hispanic community are related to students' academic achievement, as a start, two specific questions must be addressed: First, Do different Hispanic groups in the U.S. display different levels of academic achievement? Second, Are there differences among U.S. Hispanic groups in home processes related to school achievement?

#### General Purpose of the Study

The purpose of this study is twofold: a) To examine the degree of similarity in academic performance among selected Hispanic groups in the U.S. And b) to examine the unique patterns of parent background, parent processes and student processes that determine level of academic achievement within each Hispanic group; and more specifically, to ascertain

whether the familial factors underlying school achievement differ for Hispanic groups experiencing academic deficit.

### Justification for the Study

As noted earlier, previous efforts to remediate academic underachievement among minority students have not been very successful. Fraser (1959), Bloom (1964) and Jensen (1968) have criticized past efforts for focusing on crude socio-economic variables. A need therefore exists to examine more subtle home and family factors in the child's development. Moreover, the Hispanic population in the U.S. is sizable and diverse, and indications exist that some Hispanic groups in this country encounter serious difficulties in the area of academic performance. Finally, the possibility exists that not all Hispanic students experience academic deficit, or function under the same home and family conditions. A needed area of study therefore concerns the extent to which certain interacting variables determine academic performance in members of this group, and the extent to which such interactions vary in determining differences in performance across subgroups.

The starting point in any effort of this type is the identification of an adequate theoretical model to guide in the research effort. A review of existing theoretical

formulations reveals that recently a theory has been presented that fulfills this need.

## CHAPTER II

### REVIEW OF THE LITERATURE

#### Theoretical Background

A number of theoretical formulations were identified that address the problem of academic underachievement among minority students. They can be divided into two major positions: The Cognitive position and the Social-Environmental position.

#### The Cognitive Position

Two different cognitive views have been adopted by opposing groups of scholars: A polygenic view and a psychoenvironmental view. While both groups assume mental ability to be the major determinant of students' school achievement, the former group believes this attribute is inherited; the latter group assumes it to be a function of early childhood experiences.

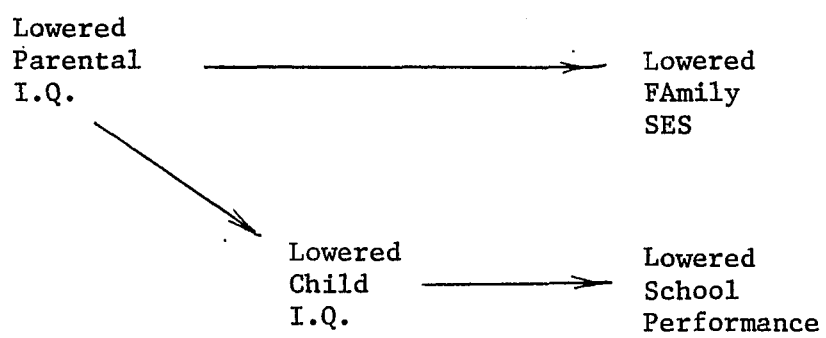
The Polygenic View. Proponents of the polygenic view (Erlenmeyer-Kimling & Jarvik, 1963; Jensen, 1980) assume that children of low-SES homes fall behind in school because their parents generally tend to possess a lower level of mental ability than do the parents of children in higher

socio-economic levels. Low-SES children tend to inherit their parents' lower mental ability and this makes it comparatively difficult for them to learn. This position has been defended using findings of studies on identical twins (Newman, 1937; Shields, 1962; Burt, 1963; Juel-Nielsen, 1965); findings of studies on the relationship between the intelligence test scores and occupational levels of American adults during World War II (Johnson, 1948); and findings of the Coleman Report (Coleman et al., 1966), already noted, showing minority pupils to fall as much as one standard deviation below white, non-Hispanic pupils in achievement tests. The polygenic view of factors affecting student achievement is depicted in Figure 2.

The polygenic perspective has been questioned on statistical and theoretical grounds. First, the statistical rigor of the major studies cited in support of this position has been questioned (Kamin, 1974). Second, from a theoretical viewpoint, and of particular relevance to the present issue, the polygenic stance suffers from a serious theoretical shortcoming: This approach to mental ability has relied almost exclusively on factor analysis to arrive at a formulation of  $g$ , its central concept. But, according to Jensen (1980), such an approach leaves much to be desired when the goal is scientific theory building:

Figure 2

## The Polygenic Model



All theoretical speculation [concerning the nature of  $g$ ] so far, has been quite lacking in the kind of heuristic power needed to get on with the empirical job of hypothesis testing, which is the sine qua non of theory building. At present, it seems safe to say, we do not have a true theory of  $g$  or intelligence... (p. 25).

The Psychoenvironmental View. Proponents of the psychoenvironmental view (John, 1963; Kamin, 1974; Zamm, 1975) assume that academic achievement is a function of environmental conditions that either promote or impede cognitive development. The socio-economically disadvantaged home, it is argued, fails to provide the child with critical experiences at an early age that would nurture his cognitive development to the point where he can take advantage of educational opportunities. Such lack of home stimulation is in turn a function of the family's lowered socio-economic status. Describing the position of such psychoenvironmentalists as Jerome Bruner, Benjamin Bloom and J. McV. Hunt, Pines (1967) wrote:

These men believe that an individual's achievement in life depends very largely on what he has been helped to learn before the age of four, for that is when human intelligence grows most rapidly and when roots of intellectual curiosity are laid. They also believe that millions of children are being irreparably damaged because they do not learn enough during this crucial period... for the children of poverty, the consequence is nearly always a disaster-- a preordained failure in school and in adult life (p. 678).

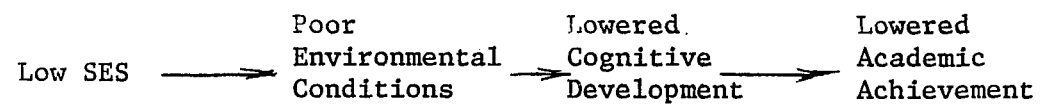
There exists considerable disagreement among psychoenvironmentalists concerning those specific types of experience which the child must undergo during the crucial early years in order to begin developing cognitively at the proper rate (Clarizio, Craig & Mehrens, 1970). For John (1963) this involves the acquisition of language skills, which lie at the base of cognitive ability. But the acquisition of such skills requires the presence of adults who are attentive to, and who consistently reinforce, the child's early attempts at language usage-- a set of conditions, according to John, largely lacking in low-SES homes.

For Zamm (1975), too, this involves the acquisition of linguistic skills. But the dynamics underlying them and their acquisition differ dramatically from those proposed by John. In Zamm's view, linguistic ability consists of "the merging of perceptual and cognitive functional processes which allow for integrated reactions toward that spatial-conceptual reality that is language" (p. 46). But the acquisition of such skills requires optimal levels of sensory stimulation at an early age. It is the function of such stimulation to enable the child to traverse the sensorimotor stage proposed by Piaget and to move to the more advanced cognitive stages he posited. Such levels of sensorimotor stimulation are, according to Zamm, largely lacking in low-SES homes.

For Hess & Shipman (1965), the conditions for the propitious beginnings of cognitive development involve a rich mother-child communication system and a family system that allows for a wide range of alternative behaviors on the child's part. According to Hess & Shipman, low-SES homes lack these two important conditions. The general dynamics proposed by adherents of the psychoenvironmental view to underlie the present problem are depicted in Figure 3.

Figure 3

## The Psychoenvironmental Model



The psychoenvironmental approach has suffered from a number of serious shortcomings. First, there is the sheer number of alternative models that have been presented-- typically as mutually exclusive formulations (Clarizio, Craig & Mehrens, 1970)-- which, to an observer, may create the impression of a conceptual "Tower of Babel" for the formulations in this camp. Then, there is the fact that experimental attempts to accelerate cognitive development (Rosenthal & Jacobson, 1968; Ziegler, Abelson & Seitz, 1973), based on such models, have been notably lacking in success. Based on their review of past efforts, Brody & Brody (1976) stated:

Our review of intervention studies leads to the pessimistic conclusion that we do not at present have techniques for changing intelligence test scores in a meaningful way by experimental intervention (p. 163).

Thus, school achievement, according to this position, is a function of mental development, which tends to lag in low-SES homes. But efforts to rectify mental underdevelopment in low-SES children have been typically unsuccessful. It would appear, then, based on findings yielded by the present paradigm, that school underachievement

among low-SES students is unrectifiable.

Probably the major limitation attending the polygenic and psychoenvironmental perspectives encountered has to do with the oversimplification of their essentially additive models (see Figures 2 and 3), which make little or no allowance for important interactions among key variables. But as already noted, it has become apparent that such interactions must be considered in drawing an accurate picture of the situation: It is likely that different dynamics hold across levels of interacting individual, group and environmental factors in determining school achievement. For these reasons, attention to the problem of academic underachievement among minority students faded during the 1970's.

More recently, Marjoribanks (1979) presented theoretical and empirical work that takes such interactions into account, and makes consideration of these questions possible. Because of its scope and because of its relevance to the present undertaking, it will be considered in some detail.

#### The Social-Environmental Position

Marjoribanks (1979) proposed that the problem of academic underachievement among minority students must be viewed from a sociological, as well as from a cognitive

ability perspective. Two factors must be examined in viewing the problem realistically: The role that dominant social groups play in the setting of academic values, and the role that the family plays in the transmission of these values to its children:

Families from dominant [social] groups have: (a) the power to decide what is "valued" in educational systems, and (b) the means for passing on to their children cultural capital related to the achievement of the "valued" goals of schooling. (p. 12)

Conversely, children of subordinate social groups, in effect, belong to groups that are relatively powerless to decide what kind of school achievement is to be rewarded by society. Further, because their families lack the cultural traditions related to the achievement of the "valued" goals of schooling-- or the means for passing such traditions on to their children-- such children fail to develop the attitudes and behavioral skills necessary for academic success.

Finally, Marjoribanks proposed that since, in industrial societies, numerical and linguistic skills are valued by the dominant groups as hallmarks of an educated person, it is in numerical and linguistic skills that children from dominant-group homes should be expected to

perform at a higher level than children from subordinated-group homes. This expectation should hold, given the notions of dominant and subordinate social groups and that of the transmission of cultural capital already encountered.

The bulk of Marjoribanks' effort consists of an exploration of the family dynamics underlying school achievement. To carry out his investigation, the author considered in some detail the relationship between ethnicity and social class (to which he referred as the "ethclass") and its role in determining the academic values of parents. He then considered the family's role in engendering attitudes and behavioral modes related to children's school success. Finally, Marjoribanks formulated a typology for establishing a family's potential for engendering such attitudes and behavioral modes in its children.

The Ethclass and its Role in Determining Academic Values. Marjoribanks derived the notion of the ethclass from Gordon (1978), who proposed that, in discussing differences among ethnic groups in a given culture, it is necessary to differentiate between the ethnic group and the ethclass:

The ethnic group is the locus of a sense of historical identification, while the

ethclass is the locus of a sense of participational identification. With a person of the same social class, but of a different ethnic group, one shares behavioral similarities but not a sense of peoplehood. With those of the same ethnic group but of a different social class, one shares the sense of peoplehood but not of behavioral similarities (p. 136, as quoted by Marjoribanks, 1979, p. 11).

Although a person may historically identify with a subordinated ethnic group, he may nevertheless actively exercise key behavioral modes exhibited by the dominant group. But it should be expected that active exercise of such behavioral modes will result in a social standing approximating that of the dominant group. The most obvious such standing is SES (education-occupation) and to the present writer, SES is probably the best indicator of the degree to which an individual belonging to a minority group is actively exercising the behavioral modes of the dominant group, in the sense posited by Marjoribanks. Throughout this work, SES will be viewed as an important component of the ethclass. In fact, a case will be made for viewing the ethclass, for present purposes, as an interaction between

ethnic group and SES.

An individual's ethclass (i. e., ethnic group x SES), then, might be White middle class, Hispanic lower class, or Black upper class. The foregoing implies that, in predicting how well a child will adjust to, and function in, social settings such as the school, it is not enough to know the ethnic group to which he belongs; it is also necessary to know the social class with which he is associated: It is possible that a student belonging to a minority group but associated with a high social class will perform as well academically as a student belonging to the majority group but associated with a lower social class.

The importance of the concept of the ethclass becomes clear, according to Marjoribanks, when it is viewed from the perspective of the works of Weber (1948) and Bourdieu (1973). According to Weber, school success is, as already noted, defined by the dominant social groups in given cultures:

The pedagogy of cultivation, finally, attempts to educate a cultured type of man whose nature depends on the decisive stratum's respective ideal of cultivation (p. 426, as quoted by Marjoribanks, 1979, p. 18).

In this vein, and based on notions posed by Bourdieu

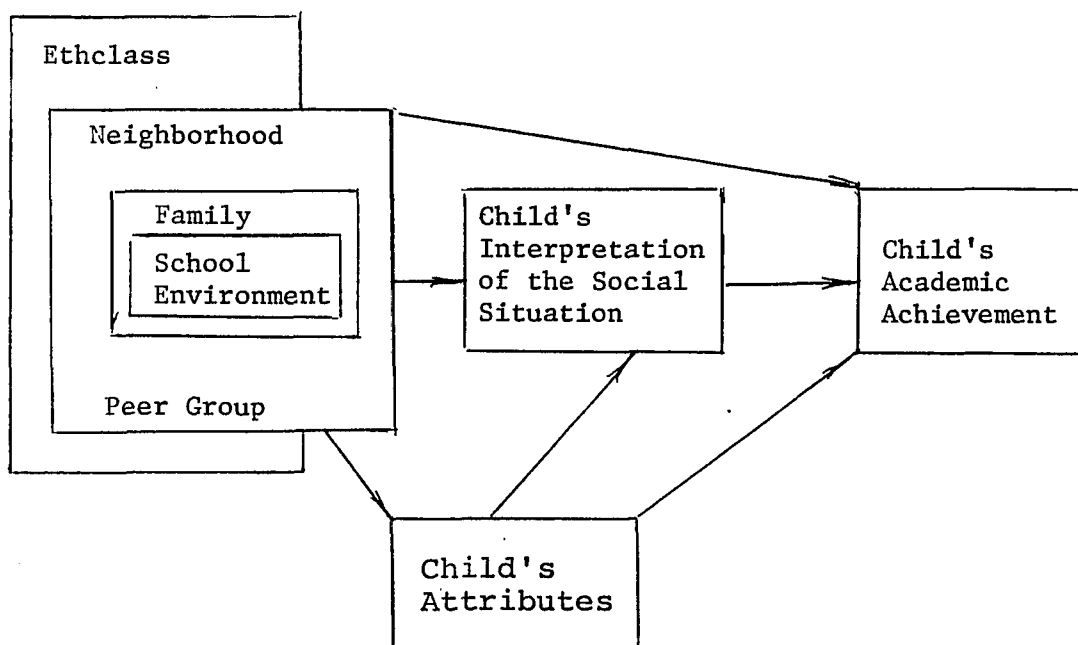
(1973) regarding the manner in which families provide children with the means for adjusting to the codes of the dominant culture, Marjoribanks concluded that

(a) in industrial societies, children with highly developed "standard" linguistic abilities and numerical skills generally are rewarded favorably, and (b) in relation to subordinated social groups, the dominant social groups possess greater means of creating for their children family learning environments that are more strongly related to the acquisition of the valued achievement skills (pp. 18-19).

The Family and the Development of Success-Related Behavioral Modalities. How does the family function to transmit to its children the behavioral modes necessary for academic success? To address this question, Marjoribanks formulated a social-environmental model depicting the relationship between the child's "life-space", his intelligence and school attitudes, his interpretation of the social situation, and his academic achievement. This model is depicted in Figure 4. In this Figure, the complex of forces impacting on the development of the child's

Figure 4

Relationship Between the Child's Lif-Space, His Intelligence Level and Attitudes Toward School and his Academic Achievement



Taken from Marjoribanks (1976)

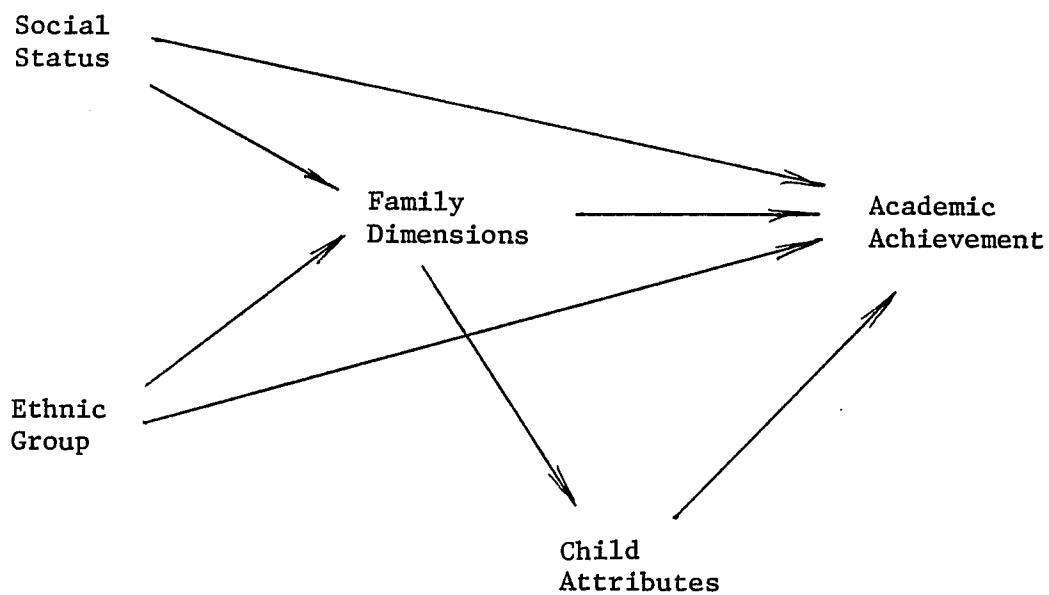
personality appears embedded in the ethclass construct; academic achievement is an indirect function of this complex of social-environmental forces. Mediating between the complex and academic performance are the child's interpretation of the social situation and such child attributes as intelligence and attitudes toward school.

From this general scheme, Marjoribanks selected a more limited model for examining the attitudes and behavioral modes making for school success. This limited model appears in Figure 5. Note that in this figure, neighborhood, peer group, classroom environment and the child's interpretation of the social situation (which appeared in the general model) have been left out. Only the extreme family components remain as the higher-order independent variables. The author's rationale for focusing on the family's social characteristics as the major independent variables is based on the assumption that the family, given its ethnicity and social class, carries the effects of the major variables left out of the limited model.

Family Dynamics: the Ideal Family Type. As noted earlier, Marjoribanks suggested that the dynamics involved in the family's interactions with the child play an important role in his attainment of academic success, and it is important to gain an understanding of the relationship

Figure 5

Marjoribanks' Limited Model



between these variables. In exploring this important relationship, the author referred to the works of Murray (1948) and others on environmental press. In Murray's (1948) theory of personality, environmental press is defined as that set of variables in the individual's surroundings having the potential for influencing his behavior. Based on empirical findings, Marjoribanks identified the following components of the family environmental press having high concurrent validity with school performance:

1. Parents' achievement orientation-- i. e., whether parents discuss the child's progress and praise the child for doing well in school; amount of time parents expect the child to spend on homework; and familiarity of parents with school events. In relation to this component, Walberg & Marjoribanks (1973) found high canonical loadings on the same variate for achievement press, verbal ability and number ability (.93, .92 and .90, respectively). And Kellaghan (1977) found high correlations between home achievement press and reading achievement ( $r = .52$ ,  $p < .05$ ).

2. Family press for English-- i. e., the use of English in the home and parental reading habits. In relation to this component, Walberg & Marjoribanks (1973) found high canonical loadings on the same variate for press for English and number and verbal abilities (.56, .92 and .90, respectively).

3. Press for independence-- i. e., encouragement of self-reliance and autonomy in a decision-making situation. In relation to this component, Walberg & Marjoribanks (1973) found high canonical loadings on the same variate for press for independence and verbal and number abilities (.55, .92 and .90, respectively).

4. Educational-occupational aspirations-- i. e., how much education and what types of occupation parents want their children to achieve. In relation to this component, Marjoribanks (1976) found a high correlation between parents' educational-occupational expectations and verbal achievement ( $\underline{r} = .64, p < .01$ ); and between parents' educational and occupational expectations and math achievement ( $\underline{r} = .67, p < .01$ ).

These four factors-- achievement orientation, family press for English, press for independence and educational-occupational aspirations-- describe the family learning environment.

The Typology of Family Environments. Using a formulation by Merton (1968), Marjoribanks refined Murray's system to deal more specifically with ethclass variables. Merton's typology of social and cultural structures consists of two elements: Educational aspirations that parents have for their children; and the means for reaching out for goals,

which Merton classified as instrumental and expressive orientations (instrumental orientations consist of family press for English-- similar to the second factor noted above-- and expressive orientations involve family press for autonomy-- similar to the third factor noted above).

The Typology of Family Environments (TFE), adapted by Marjoribanks from Merton, classifies families in terms of interactions between levels of family orientations and levels of family aspirations. It may be represented as in Table 2, which is a tabulation by the present worker based on Marjoribanks' formulation. As evidenced in Table 2, these interactions produce eight cells, each characterized by a unique quality of family environment for academic achievement.

The cells ranging between 1 and 8 represent varying degrees of favorableness for success. The categories comprising these cells were labeled by Marjoribanks according to the quality of the home environment they represent. The detached environment is one in which parents exhibit low aspirations, weak instrumental orientations and dependent-expressive orientations; the chimerical environment is one in which parents stress family dependence, weak instrumental orientations and medium-to-high aspirations; the detached-

Table 2  
 Typology of Family Environments

Orientations		Aspirations	
Instrumental	Expressive	Low to Medium	Medium to High
Weak	Dependence	1. Detached Environment	2. Chimerical Environment
	Independence	3. Detached-Independent Environment	4. Conflict Environment
Strong	Dependence	5. Protective Environment	6. Ambivalent Environment
	Independence	7. Ritualistic Environment	8. Committed Environment

independent environment is one in which parents have low to medium aspirations and weak instrumental orientations, but encourage independence on the part of their children; the conflict-oriented environment is one in which parents have high aspirations, independent-expressive orientations, and weak instrumental orientations; the protective environment is one in which parents have strong instrumental orientations, but low-to-medium aspirations and weak press for independence; the ambivalent environment is one in which parents have medium-to-high aspirations, strong instrumental orientations, but weak press for independence; the ritualistic environment is one in which parents have low-to-medium aspirations, strong instrumental orientations and strong press for independence; and the committed environment is one in which parents have strong instrumental and expressive orientations and medium-to-high aspirations (pp. 70 - 71).

Thus, Cell 8 (Committed Environment) represents the ideal family type, which has the highest potential for preparing the child for academic success. At the other extreme, Cell 1 (Detached Environment) represents the lowest potential for preparing the child for academic success.

In summary, Marjoribanks (1979) suggested that in accounting for academic performance among minority students,

social class as well as ethnicity must be taken into account. The complex family dynamics that determine academic achievement may vary across and within ethnic groups according to the family's social status. Thus, ascertaining the ethclass and the family dynamics characteristic of specific groups should be the first step toward gaining an understanding of the conditions underlying academic deficit-- and in efforts at remediation of academic underachievement.

Some observations seem relevant concerning Marjoribanks' formulation. First, his emphasis on Weber's notion of dominant social groups (i. e., groups with the power to set academic standards) provides a key for clarifying the interactive nature of the ethclass (ethnic group x SES). If a number of ethnic groups are classified in terms of their degree of social dominance ("Low", "Medium" and "High") and SES is classified in terms of an educational-occupational index ("Low", "Medium" and "High"), then a 3 x 3 table depicting interactions between ethnic-group membership (in terms of degree of social dominance) and SES can be derived. Table 3 presents such a matrix, in which the values of the row and column headings are multiplied to yield cell products. These products represent expected degree of school success. The higher the value, the higher the expected degree of success. In what follows, it

Table 3  
Ethclass Matrix

SES	Group's Cultural Dominance		
	1 (Low)	2 (Medium)	3 (High)
1 (Low)	1 (a)	2 (b)	3 (c)
2 (Medium)	2 (d)	4 (e)	6 (f)
3 (High)	3 (g)	6 (h)	9 (i)

is assumed that the effect sizes of SES and cultural dominance are equal. While empirical research may show these effect sizes to differ, or to be additive rather than multiplicative, the present assumptions are useful for the purpose of illustration.

A useful comparison between cells for illustrating the relevance of the ethclass notion is that between cells g on the one hand, and b and c on the other. A student in cell g, whose family is high in the socio-economic ladder but belongs to an ethnic group which is low in social dominance, might be expected to perform in school as well as a student in cell c, whose family is low on the socio-economic scale but belongs to an ethnic group which is high in social dominance. The same student in cell g might also be expected to perform somewhat better academically than a student in cell b, whose family is low in the socio-economic ladder but belongs to an ethnic group which is "medium" in social dominance.

(It might be argued that to think of the ethnic group purely in terms of social dominance, as is done here, is to rob the notion of its richer meaning of the "locus of historical identification" alluded-to by Marjoribanks. However, the author made the concept of ethnicity relevant in the present context only in terms of the extent to which a particular ethnic group possesses the power to determine what

constitutes academic achievement; the notion of "historical identification", in the sense of "sharing a sense of peoplehood" with others, has no operational bearing on the rest of Marjoribanks' formulation. This point is pursued below, in describing the application of the social-environmental model to the present study. It may also be pointed out that, although social dominance was that aspect of ethnicity alluded-to by Marjoribanks, he did not operationalize or quantify this dimension. Thus, although, for the purpose of discussion, a continuous dominance scale was used above, such a scale does not exist in Marjoribanks' formulation. In the Social-Environmental model, ethnicity remains a relatively crude variable.)

Second, as already noted, the present interpretation of the notion of the ethclass assumes an interaction between ethnicity and SES as the major determinant of school achievement, and it might be assumed that such a postulate has predictive theoretical power. However, it is proposed that any assumed predictive theoretical value is more apparent than real: While theoretical predictions can be made in the case of SES (This variable involves a scale on at least the interval level, and it is possible to predict that some function of SES will vary as SES varies), the same

cannot be said for Marjoribanks' concept of the ethnic group. As already noted, as it stands in Marjoribanks' formulation, ethnicity involves a nominal scale (either a person is Mexican-American or he is not; either a person is White, non-Hispanic or he is not, etc.), and so, there exists no ordered scheme on which theoretical predictions (whether one-tailed or two-tailed) can be made regarding some function of ethnicity. But if such is the case, it is not possible to mathematically predict what effect on a dependent variable an interaction between ethnicity (a nominal variable) and SES (a true continuous variable) will have; such a prediction would require that both variables be continuous.

As an interacting factor, the concept of ethnicity does have "post-dictive" value, in the sense that empirical research may reveal interactions between SES and ethnic-group membership. But such interactions can only be discovered through exploratory empirical research; they cannot be predicted theoretically.

One way in which ethnicity can be "transformed" into a continuous variable was described above: Some attribute associated with a set of ethnic groups can be discovered through exploratory research and the groups can then be ranked in terms of such an attribute. If this step is taken, then the effects of interaction between such a ranking and

some other continuous independent variable can be predicted. But if this is the only way in which ethnicity can assume predictive heuristic power, then it may be questioned whether ethnicity per se can be viewed as a variable at all, in the theoretical sense of possessing, in Jensen's (1980) words, "the heuristic power needed to get on with the empirical job of hypothesis testing, which is the sine qua non of theory building". In this sense, the concept of ethnicity, by itself, would appear to be sterile, suffering from the same severe limitations described by Jensen (1980) in regard to g.

It may be added that this observation does not detract from the importance of the concept of the ethclass for accounting for school achievement. Rather, it seems, it places this notion in the proper theoretical perspective: It provides a useful frame of reference for designing exploratory research (say, in the form of the factorial Analysis of Variance, in which at least one of the factors may be nominal) on the basis of ethnic-group membership. In the present study, which uses Marjoribanks' formulation as its theoretical base, ethnic group membership is examined--but in an exploratory, rather than in a confirmatory manner.

Third, in this regard, a major point needs to be clarified. It was earlier suggested that Marjoribanks'

formulation takes into account important interactions between key factors in the child's development. But these interactions are of two types: 1) That between ethnicity and SES, which comprises the ethclass, and which is useful for exploratory research. 2) And those involving the Typology of Family Environments, whose tabular quantification described earlier seems mathematically capable of yielding hypotheses for investigation.

Finally, it is interesting to note important differences between Marjoribanks' Social-Environmental position and the psychoenvironmental positions encountered earlier-- differences that favor Marjoribanks' formulation over the others. First, in using the notion of intelligence as their central concept, the psychoenvironmental positions take a fundamental cognitive structural approach to explain children's achievement. All efforts to understand school underachievement and to correct it revolve around the assumption of preexisting mental structures and questions of how they form. For his part, Marjoribanks does not view mental ability in this central manner. His approach is more functional, relying on the notion of environmental press as it impacts on the acquisition of observable behavioral modes related to school achievement.

Second, of practical importance, the

psychoenvironmental approaches typically assume that, unless cognitive development has occurred optimally by the age of four, the individual is doomed to a life of underachievement. Efforts at acceleration of cognitive development beyond this age are seen as unpromising, with the corollary that school underachievement among low-SES students is unlikely to be corrected past this stage. Marjoribanks, not relying on the notion of mental ability as an all-important determinant, unchanging past the age of four, leaves open the possibility of rectification at a later age. In fact, a successful intervention program that he cited in support of his position was carried out with junior high school-age students (Smith, 1968).

Third, perhaps because of Marjoribanks' determination to concentrate on the social-environmental dynamics that make for the development of success-related behavioral modes, he has systematically studied interactions among key variables in individual students' lives. In fact, it is this system of interactions, captured in the Typology of Family Environments, that forms the heart of the Social-Environmental formulation and gives it its theoretical appeal.

These differences seem fundamental enough to set the

social-environmental position apart from the psychoenvironmental formulations.

Evidence in Support of the Typology of Family Environments

Departing from previous, essentially additive models, Marjoribanks (1979) formulated an interactive scheme of how the quality of the family environment relates to school achievement. The following paragraphs summarize empirical evidence which supports this formulation.

In relation to the Typology of Family Environments (TFE), it may be surmised a) that the stronger the instrumental and expressive orientations and the higher the level of aspirations, the more favorable is the family environment for academic performance; and b) that SES is positively related to the family dimensions as well as to academic achievement. The present writer attempted to gain an insight into the soundness of these hypotheses by employing data presented by Marjoribanks.

Marjoribanks (1979) assessed the family environments of six ethclasses in Australia: Anglo-Australian (AA) middle status, AA lower status, English, Greek, Southern Italian and Yugoslavian. To this end, he used the Family Environment Schedule, an interview instrument that he developed for assessing the quality of the home environment in terms of the TFE scheme. He also determined the families' SES and

collected data on the math achievement, word knowledge and comprehension, I. Q., and school attitudes of children belonging to these families.

In attempting to validate the hypotheses noted above, the present writer employed the following three-phased procedure: In Phase I, the row and column headings of Table 2 were given values of 1 (for the "Weak", "Dependent" and "Low to Medium" levels) and 2 (for the "Strong", "Independent" and "Medium to High" levels). Secondly, each cell was quantified by taking its row x column product. Finally, the cell products were ranked from lowest (i. e., 1) to highest (i. e., 8). This quantification format appears in Table 4. In Table 4, the cell row x column products appear in parentheses, next to the cell rankings. (This approach assumes comparability of dimensions. While often the use of scaling techniques proves necessary to achieve this comparability, it was felt that the present approach, without scaling, would serve as a rough guide.)

In Phase II, a cell value was assigned to each ethnic group examined by Marjoribanks according to the family type he described (his type assignments appear in Table 5). Secondly, the groups were ranked in terms of their SES, in terms of their TFE scores and in terms of each academic area

Table 4  
TFE Quantification Scheme

Orientation		Aspirations			
Instrumental	Expressive	1		2	
		Low to	Medium	Medium to	High
1 Weak	1 Dependence	(1)	1	(2)	3
	2 Independence	(2)	3	(4)	6
2 Strong	1 Dependence	(2)	3	(4)	6
	2 Independence	(4)	6	(8)	8

Table 5

## TFE Category Assignments of Australian Ethnic Groups

Ethclass	Family Type	TFE Cell Score
Anglo-Australian Middle Class	Committed	8
Anglo-Australian Lower Class	Ritualistic	4
English	Ritualistic	4
Greek	Chimerical	2
Southern Italian	Chimerical	2
Yugoslavian	Chimerical- Detached	1.5

explored in Marjoribanks' study.

Finally, in Phase III, Spearman's Rho was calculated among the SES, TFE and academic rankings. The rankings and the correlations of interest appear in Table 6.

Perusal of Table 6 reveals that all correlations between the variables examined are significant beyond the .02 level, suggesting that the typology is valid for predicting group academic achievement and level of cognitive development-- and for assessing the relationship between SES and the quality of family environment. These high correlations also suggest that the present quantification of the TFE may be useful for its statistical treatment in regard to school achievement.

It is interesting to note that, although Marjoribanks felt that student attitudes toward school were likely determinants of academic performance (and in turn to be determined by the family environment), he found negligible correlations between these attitudes and school achievement measures (the highest correlation was .19), and no significant differences among the groups examined in terms of the attitude measures (p. 50). In view of the fact that these outcomes are consistent with the earlier findings of studies that used other tests of attitudes (Jackson & Ladarherne, 1967); Goldfried & D'Zurilla, 1973; Fennema & Sherman, 1977) the construct

Table 6

Group Rank Correlations Between SES, TFE Scores and School Achievement Measures

Group	SES	TFE	I.Q.	Math	Word Knowl.	Word Compr.	
	Rank	Score					Rank
A	6	8	6	6	6	6	
B	4	4	4.5	5	5	4	
C	5	4	4.5	4	4	5	
D	1	2	2.5	1	1	2	
E	2	2	2.5	1	1	2	
F	3	1.5	1	2	3	3	
Corr with SES:			.79a	.77a	.89b	1.0b	1.0b
Corr with TFE:				.88b	.79a	.79a	.79b

<sup>a</sup>  $p < .02$     <sup>b</sup>  $p < .01$

A= Anglo-Australian Middle Status  
 B= Anglo-Australian Lower Status  
 C= English  
 D= Greek  
 E= Southern Italian  
 F= Yugoslavian

of attitudes toward school in the present context would appear to have little empirical value. In the present study, the variable of attitudes toward school is replaced with others that may better mediate between family environment and school achievement. These other variables are described in detail below.

### Summary Statements

A number of theories were reviewed that attempt to account for academic underachievement among low-SES students. They were divided into two major categories: The Cognitive Position and the Social-Environmental position. The cognitive position, which holds that school achievement is a direct function of mental ability, has taken two opposing forms: The Polygenic view, which holds mental ability to be inherited; and the Psycho-Environmental view, which holds mental ability to be a function of early childhood experiences.

The Social-Environmental position presented by Marjoribanks (1979), on the other hand, has largely eschewed reference to mental ability as the major determinant of school achievement, and has focused attention on the effects of home influence on student behavioral modes associated with academic performance. It has also focused attention on social and cultural dynamics of the family as determinants of

criteria for school success.

Of the various formulations considered for addressing the problem of academic underachievement among minority students, Marjoribanks' seems the most attractive. First, its breadth and scope enable it to consider relationships among variables that other models have heretofore presented in isolation. Moreover, in its use of the Typology of Family Environments (TFE), it makes allowances for important interactions between key dimensions of the family setting. Finally, as Marjoribanks reported, the variables selected by him were derived from empirical findings regarding their association with academic achievement-- a fact that likely underlies the TFE's heuristic power for accounting for academic performance in the Australian study.

Marjoribanks' formulation appears well suited for addressing the major questions posed for investigation: Assuming high correlations between SES, TFE score and school achievement scores (correlations already suggested by the above group-rank correlational analysis of Marjoribanks' data), further analysis may disclose a) whether differences in school achievement exist among Hispanic groups, and b) whether such differences as might exist might be due to differing family-environmental characteristics found among

these groups. For these reasons, Marjoribanks' formulation, with some modifications, was adopted as theoretical basis for this inquiry.

The remainder of this section involves a review of findings in the literature related to the objectives of this study, viewed in the context of Marjoribanks' formulation. Because, as already stated, a number of modifications were made to Marjoribanks' model for the present adaptation, the present theoretical model will be presented first. Then, findings in the literature pertinent to this theoretical structure will be discussed.

#### Theoretical Scope of the Present Study

An adaptation of Marjoribanks' social-environmental scheme was used as theoretical base for the present study, with several modifications. First, one problem in Marjoribanks' ethclass measure is that it combined three distinct elements in the class component of the measure. He described his class measure as "... an equally weighted composite of father's occupation and the education of the mother and father" (p. 29).

In the present study, it was deemed advantageous to eliminate influences of economic resources from the educational level of the parents. In addition, it was deemed

desirable to separate the father's and the mother's contribution to the family's home academic climate.

Thus, instead of using an overall ethclass measure as Marjoribanks' suggested, a distinction was drawn between individual measures of ethnic status and educational background of each parent. Not only was the educational level of the father and the mother separated, but the time that each parent had spent in the U. S. was examined as a factor that could qualify the effects of parents' educational level. In addition to separating the father's and mother's background, it was deemed desirable to examine the separate contributions of the father and mother to the academic climate of the family. Thus, each of the three family process measures derived by Marjoribanks were obtained for each parent. It was thought conceivable that the fathers and the mothers in the various Hispanic groups may have differed in their press for English in the home, their press for independence in their child and their educational-occupational aspirations for their child.

Second, the variable of attitudes toward school, which was found to be of little empirical consequence in prior research, was replaced with those of time spent on homework and academic aspirations on the part of the student. The

variable of time spent on homework was suggested by Marjoribanks' concept of achievement orientation, which includes the amount of time parents expect their children to spend on homework. It was included to gain an insight into the agreement between parental expectations and actual time spent by the student on this activity.

The variable of student aspirations was suggested by Marjoribanks' concept of parents' educational-occupational aspirations. It was included to gain an indication of the agreement between parental aspirations and student aspirations.

The variables of time spent on homework and student aspirations were included to obtain a more detailed view of the impact of parent processes on their child's academic achievement. These measures are in lieu of that of attitudes toward school, which, as already noted, was found to have negligible predictive power for present purposes.

Finally, it was earlier suggested that the concept of the ethclass posed by Marjoribanks is useful for exploratory research but not for confirmatory research. The reason given for this stance was that ethnicity, one of the components of the ethclass, is a nominal variable, not suitable for the purpose of prediction. Instead, ethnicity was studied in an exploratory fashion, using Analysis of Variance procedures to

ascertain whether differences exist in the dependent variables among the groups examined.

The theoretical structure of the present study can thus be depicted as in Figure 6. Figure 6 shows the variables of interest in this inquiry and depicts the relationships postulated among them. It will be noted that there are three classes of variables used to predict student achievement: Each parent's background, each parent's achievement processes and the student's achievement processes. In addition, it will be noted that in this figure, the variable of Hispanic group membership is boxed in by broken lines. This is to indicate the special status of the variable. The analyses described below involve both path and analysis of variance models. Because Hispanic group membership is a nominal variable, it is not included in the path model. All the variables appearing in the model, including group membership, are used in the ANOVA's.

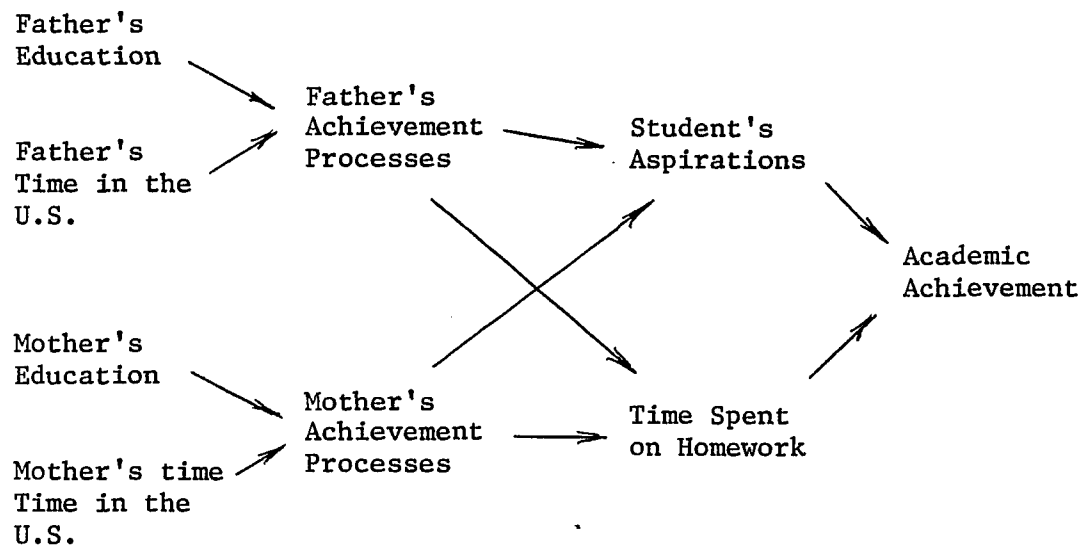
#### Previous Findings on U.S. Hispanics

#### Related to Aspects of the Present Study

Perhaps the most comprehensive survey of Hispanic high school students in the U.S. is The High School and Beyond Study (HSBS) (Nielsen & Fernandez, 1981). The HSBS is an on-going, national longitudinal study of high school students

Figure 6

## Theoretical Structure of the Present Study



which includes over 4,000 Mexican-American, Puerto Rican, Cuban and other Hispanic high school sophomores and seniors.

For the Hispanic groups examined, the HSBS presents data on the following variables: Length of family residence in the U.S.; SES in the U.S.; home Spanish-language usage; student educational aspirations; and scores on mathematics, reading comprehension and vocabulary achievement tests.

Because of the similarity between the variables examined in the HSBS and the variables included in the present model, the findings of the HSBS were deemed relevant to the issues posed for investigation in this study. Figure 7a displays the HSBS variables of interest arranged in a model similar to the theoretical structure of the present investigation. Figure 7b displays the correlations found in the HSBS among the variables. Only those higher order variables significantly correlated with the achievement measures are shown linked to the measures of achievement. The HSBS findings will be discussed under two headings: a) Findings related to the adequacy of the present model for accounting for variance in the present variables, and b) findings related to differences among Hispanic groups on the variables of interest. While Nielsen and Fernandez presented the data separately for sophomores and seniors, the results are similar for both groups, and thus, only the data

Figure 7a

Composite Model of HSBS Variables

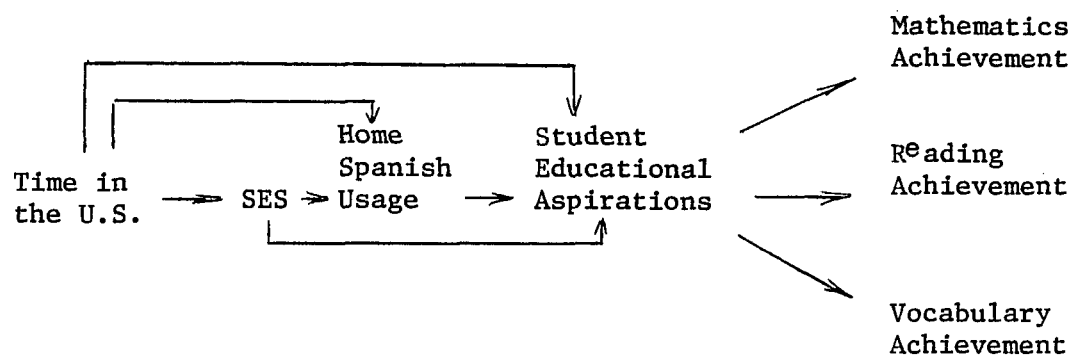
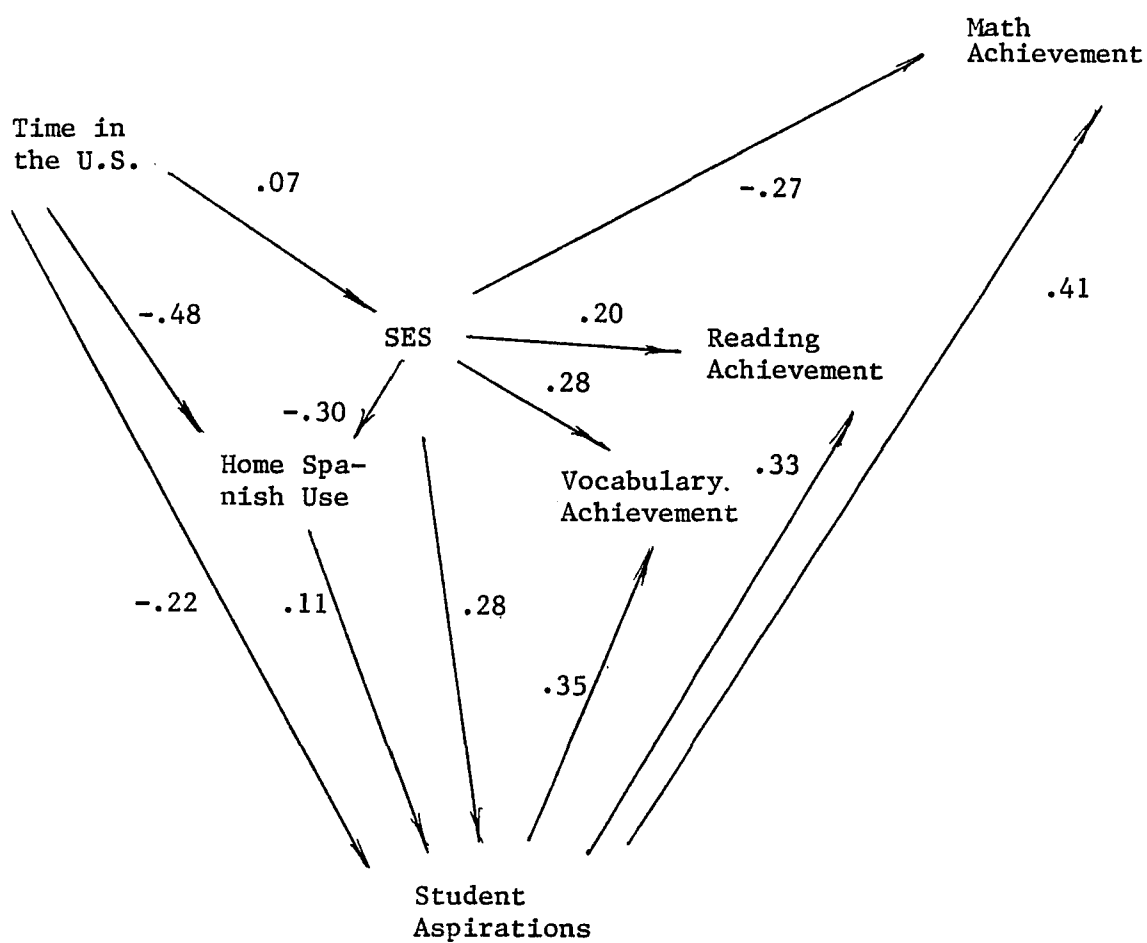


Figure 7b

## Pearson Correlations Among Key HSBS Variables



regarding seniors will be reported here.

Findings Related to the Adequacy of the Present Model for Accounting for Variance in the Dependent Variables

An examination of Figure 7b reveals several outcomes of interest: First, the negative correlations of home Spanish-language usage with length of residence in the U.S. and SES in the U.S. seem consistent with expectations: The longer the family has resided in the U.S., the more it can be expected to have assumed the behavioral modalities of the mainstream culture, including language usage and those values and life styles which function to determine educational level of each parent. Also to be expected are the positive correlations of the achievement measures with students' educational aspirations.

Second, two findings of the HSBS would at first appear to contradict expectations: a) The zero correlation between length of residence and SES (including educational level) in the U. S., and b) the negative correlation between length of family residence in this country and students' educational aspirations. These correlations might have been expected to be positive.

Finally, the near-zero correlation between home Spanish language usage and students' educational aspirations is not

as surprising as it might at first appear. Home Spanish language usage is a component of the family environment, and student aspirations were earlier postulated to vary as a function of the parents' processes.

Thus, the findings of the HSBS tend to partly support the present theoretical model, while leaving open three important questions: a) Does the educational level of the father and mother affect the child's home achievement processes? b) Is the time each parent has spent in the U. S. related to his or her achievement processes for the child? and c) Are the child's achievement processes related to the parents' achievement processes? In addition, issues related to parents' achievement processes and hours per week spent on homework still need to be examined.

Relevance to Questions Related to Differences Among Hispanic Groups in the U.S. on the Variables of Interest

The findings of the HSBS suggest that differences exist among U.S. Hispanics in terms of academic achievement as is terms of variables related to school performance. Nevertheless, these findings, too, leave some questions unanswered. Tables 7 through 9 display the outcomes of interest.

Table 7 displays the percent distribution of length of U.S. residence-- how much of the mother's life has been spent in the U.S. (no data were available for the father in this regard). An examination of the "All or almost all" column reveals that Cubans have the smallest percentage of mothers (and presumably, rest of family) having lived all or almost all of their lives in the U.S.; and that Mexican-Americans have the largest percentage. Overall, Cubans have spent the least amount of time in the U.S. and Mexican-Americans have spent the greatest amount of time in the U.S.

If the assumption is made that length of residence in the U.S. impacts favorably on variables related to school achievement, then comparison of the findings in Tables 8 and 9 with those of Table 7 will be surprising. Although, in terms of length of U. S, residence Cubans rank the lowest of the Hispanic groups examined, on all other variables appearing in these tables Cubans rank highest. The same holds true for the impact of Spanish language usage in the home on school performance. It might be thought that home Spanish language usage impacts negatively on academic attainment. But while Cubans rank highest in terms of the former variable, they nevertheless also rank highest on each of the school achievement measures. However, in view of the previous discussion related to the correlational outcomes, these

Table 7

## Percent Distribution of Length of Residence of Mother by Group

Group	All or Almost All	Over 20 Years but Not all	11 to 20 Years	6 to 10 Years	1 to 5 Years
Mexican-American	72.6	12.7	6.2	3.4	1.2
Cuban	12.8	18.4	39.9	21.8	2.3
Puerto Rican	38.7	30.4	19.5	2.6	4.0
Other Latin American	72.3	6.6	10.5	3.8	3.0

From Nielsen and Fernandez (1981)

Table 8

Distributions of SES, Spanish Home Usage, and Student Educational Aspirations

Subgroup	SES <sup>1</sup>		Spanish <sup>2</sup> Home Usage		Student <sup>3</sup> Educational Aspirations	
	%	Rank	Mean	Rank	%	Rank
Mexican-American	34.9	2	2.1	1.5	33.6	1
Puerto Rican	41.8	1	2.7	3.0	34.5	2
Cuban	25.8	4	3.2	4.0	54.9	4
Other Latin American	21.7	3	2.1	1.5	45.4	3

<sup>1</sup> Percent of subgroup with an income less than \$12,000

<sup>2</sup> Composite score of four indicators: Child speaks Spanish to the mother, mother speaks Spanish to the child, child speaks Spanish to the father, and father speaks Spanish to the child

<sup>3</sup> Composite of percentages of students who expect to complete four years of college, the Master's degree, and the Ph.D. or other advanced degree

From Nielsen and Fernandez (1981)

Table 9  
 Mean Grade Equivalence on Mathematics, Reading and Vocabulary  
 by Group

Soubgroup	Mathematics		Reading		Vocabulary	
	Mean	Rank	Mean	Rank	Mean	Rank
Mexican American	8.4	3	3.3	1.5	3.5	1.5
Puerto Rican	8.0	1	3.3	1.5	3.5	1.5
Cuban	10.1	4	3.9	4.0	4.2	4.0
Other Latin American	8.3	2	3.3	3.0	3.6	3.0
White, Non- Hispanic	11.6	-	4.9	-	4.8	-

From Nielsen and Fernandez (1981)

findings should not be surprising. Cubans migrating to the U.S. in the past three decades have had, for the most part, upper middle-class backgrounds, and the findings are thus consistent with the previous speculation that SES in the country of origin may help to determine social standing in the U.S.

In addition, it should be noted that the variable of Spanish language usage in the home may actually have little to do with family press for educational achievement. For example, the fact that the parents do not speak English does not necessarily mean that they do not impress on their children the importance of becoming proficient in the English language. The present writer knows of recently arrived Hispanic and non-Hispanic parents who, while not speaking the new language, nevertheless take pains to promote their children's mastery of it. They hire special tutors or enroll their children in private classes; they "compare notes" with other recently arrived parents concerning their children's progress in this area; and they convey to their children the notion that they consider their progress a form of status symbol. Thus, the variable of home Spanish language usage may not be as relevant a variable in the present context as might at first appear. It seems that a more subjective measure than actual home Spanish language usage is needed to

examine the full impact of home environment on academic performance. One such measure is the Press for English scale developed by Marjoribanks.

In terms of other comparisons among the Hispanic groups on the variables examined, the outcomes in Tables 7 through 9 do show group differences. However, it may be asked whether these differences are statistically significant, or whether significant differences exist between the Hispanic students and the White, non-Hispanic students examined. Nielsen and Fernandez (1981) did not report Analysis of Variance tests on their data; nor did they report total variance on the measures, based on which ANOVA's might be calculated. Based on the means, standard deviations and sample sizes provided on the achievement data, the present worker calculated t-tests between the groups on the achievement scores. Although the use of multiple t-tests in lieu of the Analysis of Variance is questionable due to the possible chance detection of significance (Guilford and Fruchter, 1973), it was felt that such a step might provide a tentative indication of the statistical significance of the findings. These t-tests disclosed that Cubans scored significantly higher ( $p < .05$ ) than other Hispanic groups on all the achievement scores, and that the other Hispanic subgroups did not differ

significantly among themselves on these measures. On the other hand, all Hispanic groups, including Cubans, scored significantly lower than White, non-Hispanics on the measures of achievement. Further research, employing more focused analyses, is necessary to more definitively explore these differences.

In summary, the findings of the HSBS tend to support aspects of the model adapted for the present study and tend to indicate that some differences exist among U.S. Hispanic groups on school achievement measures and measures associated with academic performance. However, the following question of interest to the present investigation remains open: Are there statistically significant differences among U.S. Hispanic groups in parent background variables, parent achievement processes and student achievement processes that are associated with student achievement outcomes?

As already stated, while the relatively limited scope of the HSBS leaves open important areas for investigation, the findings tend to give credence to the theoretical structure of the present study. Many of the research questions and hypotheses posed for investigation were influenced by these findings. They are described in the following chapter.

## CHAPTER III

## STATEMENT OF RESEARCH QUESTIONS AND HYPOTHESES

The objectives of this study were to a) ascertain whether Hispanic groups in the U.S. differ significantly in academic achievement; and more specifically, and b) to examine the unique patterns of familial factors that determine differences in academic achievement among these groups.

Two sets of research questions were posed for investigation, and several hypotheses, based on earlier considerations, were formulated to answer them. The first set of research questions is related to the adequacy of a general model for accounting for academic achievement in the Hispanic groups under study. The second set of research questions is specifically related to the two major objectives of the study. Research Questions Related to the Adequacy of the Theoretical Model for Accounting for Academic Achievement in the Population Under Study

Research Question I. For the selected Hispanic groups, is there a relationship between time spent by the student on homework or student educational aspirations, on the one hand;

and academic achievement?

Research Question II. For selected Hispanic groups the U.S., Is there a relationship between the quality of family environment and the children's academic achievement?

Research Question III. For selected Hispanic groups in the U.S., is there a relationship between parents' education level and their children's academic achievement?

Research Questions Related to the Major Objectives of the Study

Research Question IV. Are there statistically significant differences in level of academic achievement processes and outcomes between students of the selected Hispanic groups?

Research Question V. Are there statistically significant differences in parent achievement processes based on their educational level and time in the U. S.?

## CHAPTER IV

### METHODS AND PROCEDURE

#### Description of Sample

The sample for investigation consisted of 180 10th-grade students and their parents, representing the following ethnic groups: Puerto Rican, Cuban and Central/South American. For the Central/South American subsample, families from Panama, Colombia and Ecuador were represented. The gender breakdown for the three groups appears in Table 10. The students in the sample were selected from the New York City boroughs of the Bronx and Queens. College students in education courses, members of each of three study groups, were recruited as linkages with the parents. They identified parents of suitable students in schools and were paid \$10.00 to conduct each interview.

#### Measures and Instrumentation

##### Family Variables: Family Interview Schedule (FIS)

The FIS was adopted for the present study from Marjoribanks' (1977) Family Environment Schedule, and was designed for assessing the following dimensions of the family environment: Instrumental Orientations, Expressive Orientations and Educational-Occupational Aspirations. The

Table 10

## Gender Breakdown for the Three Hispanic Groups

Group	Male	Female	Total
Puerto Rican	24	21	45
Cuban	20	19	39
Central/South American	22	27	49

FIS was designed to obtain, in addition, information regarding the time the family (or direct ancestors) first arrived in the U.S.; and how many hours per week the child spends on homework. A Spanish language version of the FIS was used for parents who do not speak or understand English. A specimen of the English version of the FIS appears in the Appendix.

The final measure was years of school completed by the father (Blau and Duncan, 1967).

#### Student Achievement Measures

Scores on standardized school achievement tests in Mathematics and Reading comprehension, obtained from school records, were used as the achievement measures. The California Achievement Tests (CTB/McGraw-Hill, 1967) were used, and grade equivalence scores on the Reading comprehension and Mathematics components of this instrument were employed. The following formula was used to ascertain whether the student was below, at or above his/her expected grade level:

$$\text{GDS} = \text{GE} - \text{EG}$$

where

GDS = Grade Deviation Score

GE = Grade Equivalence Score as recorded  
on the CAT in years and months

EG = Student's grade in years and months

#### Procedure

After receiving two hours of training in conducting the interview, four interviewers contacted the parents directly. Prior to the interviewer's visit, the parents were asked to obtain the Reading and Math achievement scores in grade equivalence form from their child's school. The interview was carried out in the student's home, with each parent separately and with the child apart from the parents. Each interview lasted an average of 15 minutes.

#### Method of Data Analysis

To test the adequacy of the present theoretical model for accounting for academic achievement in the population under study (an objective to which Research Questions I through III were related), the three Hispanic subgroups were combined and a two path analyses were performed. The Math and Reading components of the CAT each were used as the lowest-order variables in separate analyses.

Figure 8 depicts the path model used for the analyses. In Figure 8, independent variables said to determine school achievement indirectly (i. e., Variables A, B, C, D and E) are directly linked to academic performance (single-lined arrows), as well as through mediation of variables stipulated in the hypotheses (double-lined arrows). The purpose of these additional, direct connections was to assess the extent to which the hypotheses of indirect causality were supported, and the extent to which they may have to be modified, given effects not postulated in terms of the indirect paths.

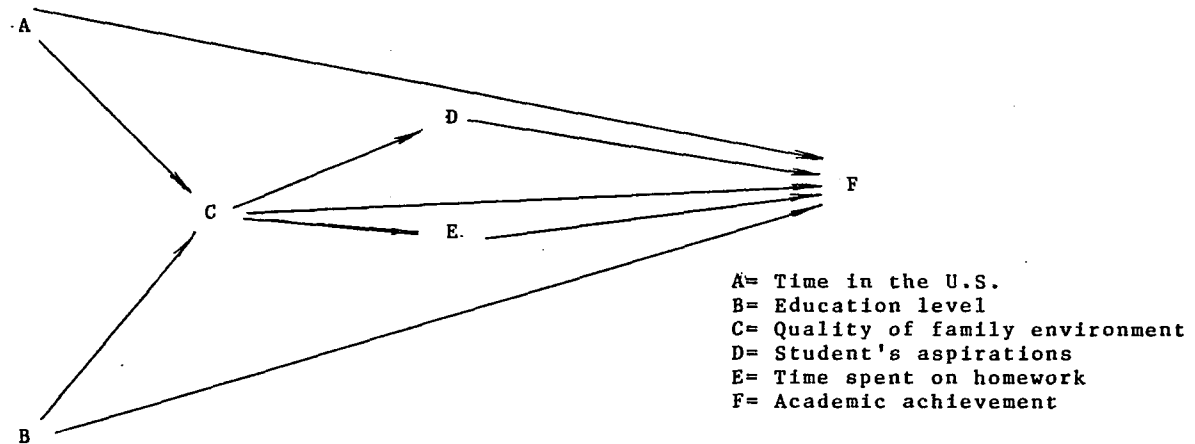
To test the hypotheses related to the two major objectives of the study (objectives to which Research Questions V and VI are related), the following procedures were followed:

For Research Question IV (Do statistically significant differences exist in academic achievement processes and outcomes between students of different Hispanic backgrounds?), the following procedures were followed to address these issues:

A two-way ANOVA was calculated initially among the three Hispanic groups on each of the academic achievement measures; Gender was used as the row factor. Since, as is made clear in the following chapter, there were no main or

Figure 8

Path Model for the Study



- Note: (1) A, B and C are measured for the mother and the father separately
- (2) C is broken down into three components: Press for English, Press for Independence and Educational-Occupational Aspirations for the Child
- (3) F consists of Mathematics achievement and Reading Achievement

interaction effects for Gender, all subsequent analyses were performed collapsing across this variable. Consequently, a one-way ANOVA and Newman-Keuls post hoc comparisons were calculated for this procedure.

For Research Question V (i.e., Are there statistically significant differences in parent achievement processes based on their educational level and time in the U.S.), the following analyses were performed for the father and mother on each of the parent achievement processes (Press for English, Press for Independence and Educational-Occupational Aspirations for the child): A two-way ANOVA and Newman-Keuls post hoc comparisons were performed. The background variables in these analyses were ethnicity, educational level and time in the U.S. of each parent. For the purpose of the analysis, the educational level was divided into three categories: 1) up to 8 years of school completed, 2) up to 12 years of school completed and 3) over 12 years of school completed. For time in the U. S., the three categories were 1) up to 10 years, 2) 11 through 20 years and 3) longer than 21 years. The purpose of this analysis was to ascertain the extent to which parents in the the Hispanic groups differed in the three achievement processes based on their level of education and time in the U.S.

## CHAPTER V

## RESULTS OF THE INVESTIGATION

The results of the statistical analysis of the data are presented in this chapter. Following a restatement of each research question, the findings will be presented. In all tests of significance, the .05 confidence level was the criterion employed to determine the rejection level for each hypothesis and significance beyond the .05 level will be indicated.

Table 11 depicts the means and standard deviations of the theoretical student variables for the three Hispanic groups separately and combined. Table 12 depicts the means and standard deviations of the theoretical father variables for the three Hispanic groups separately and combined. And Table 13 depicts the means and standard deviations of the theoretical mother variables for the three Hispanic groups separately and combined.

Results Related to Research Questions I Through III

As already stated, Path analyses were calculated to address Research Questions I through III. The results of the path analysis with Reading comprehension as the lowest-level dependent variable, appear in Figure 9. Figure 10 displays

TABLE 11

Means and Standard Deviations of Student Variables for the  
Hispanic Groups Separately and Combined

Variable	Puerto Rican		Cuban		Central/ South American		All Hispanic Groups Combined	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Reading	-2.58	1.42	-.23	.98	-.57	1.08	-1.5	1.56
Mathematics	-2.60	1.98	-.15	1.06	-.67	1.31	-1.17	1.83
Time Spent on Homework	2.91	1.45	3.23	1.16	3.53	1.08	3.23	1.15
Educational-Occupational Aspirations	13.96	3.62	16.74	3.32	15.14	2.38	15.21	3.29

Note: Reading and Mathematics scores are in the form of grade level deviation scores

TABLE 12  
Means and Standard Deviations of Father Variables for the  
Hispanic Groups Separately and Combined

Variable	Puerto Rican		Cuban		Central/South American		All Hispanic Groups Combined	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Press for English	8.91	2.43	11.76	2.24	8.46	2.71	9.58	2.84
Aspirations for the Child	20.09	7.59	24.5	2.74	22.65	3.64	22.32	5.41
Press for Independence	153.09	14.79	127.07	10.07	141.85	12.87	141.33	16.42
Education	9.25	20.89	11.74	1.56	9.35	2.88	9.23	2.48
Time in the U.S.	20.89	8.54	20.74	10.67	16.56	8.79	19.21	9.46

TABLE 13  
 Means and Standard Deviations of Mother Variables for the  
 Hispanic Groups Separately and Combined

Variable	Puerto Rican		Cuban		Central/ South American		All Hispanic Groups Combined	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Press for English	9.27	2.76	11.42	1.88	7.54	1.94	9.26	2.72
Aspirations for the Child	23.18	3.95	24.16	3.00	23.27	3.39	23.50	3.49
Press for Independence	155.50	13.52	127.24	8.96	143.92	13.89	142.96	16.76
Education	10.68	1.88	11.24	1.88	8.85	2.36	10.16	2.30
Time in the U.S.	19.30	7.50	20.55	10.83	16.14	7.9	18.61	8.75

Figure 9

Path Analysis Outcomes for Reading Achievement

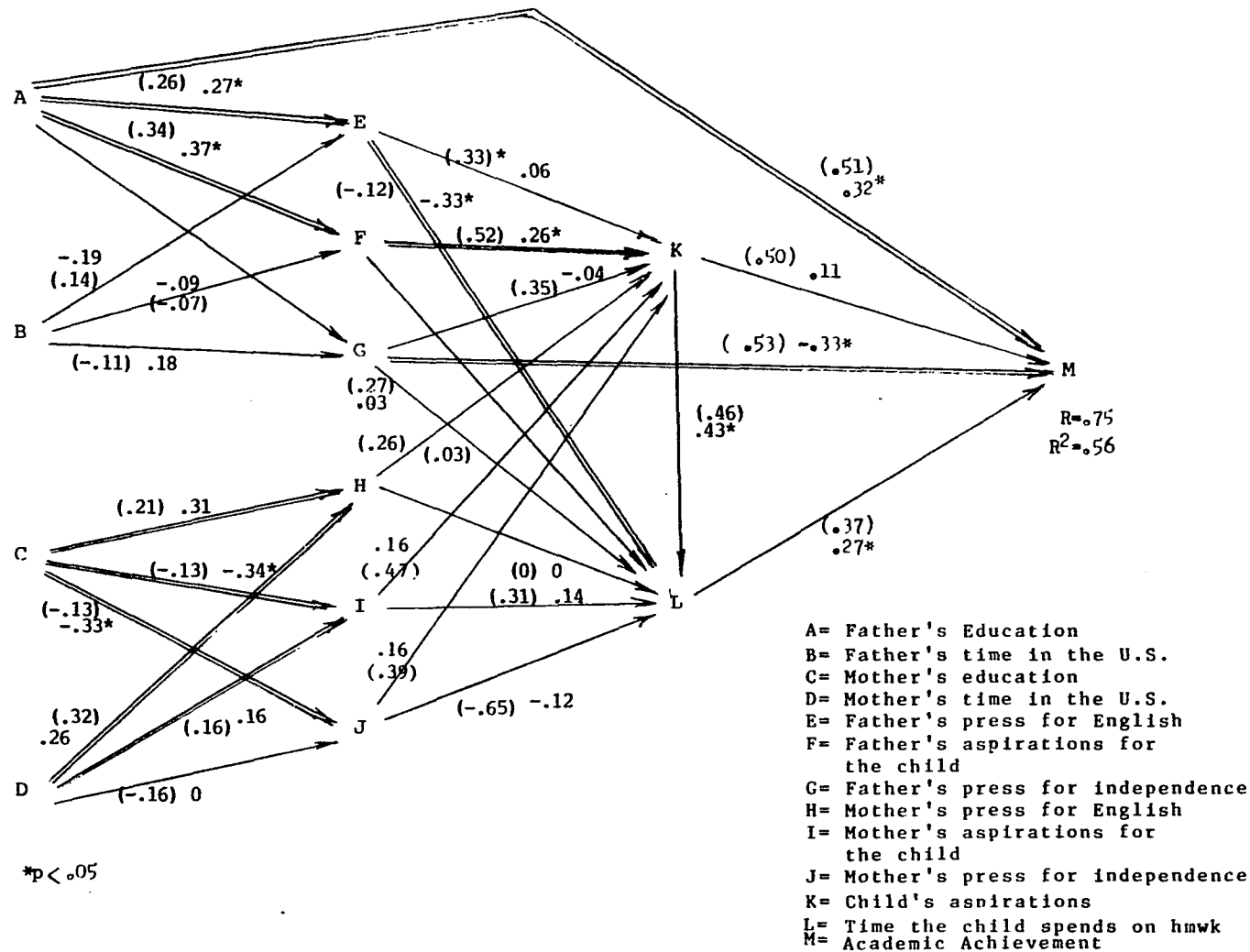
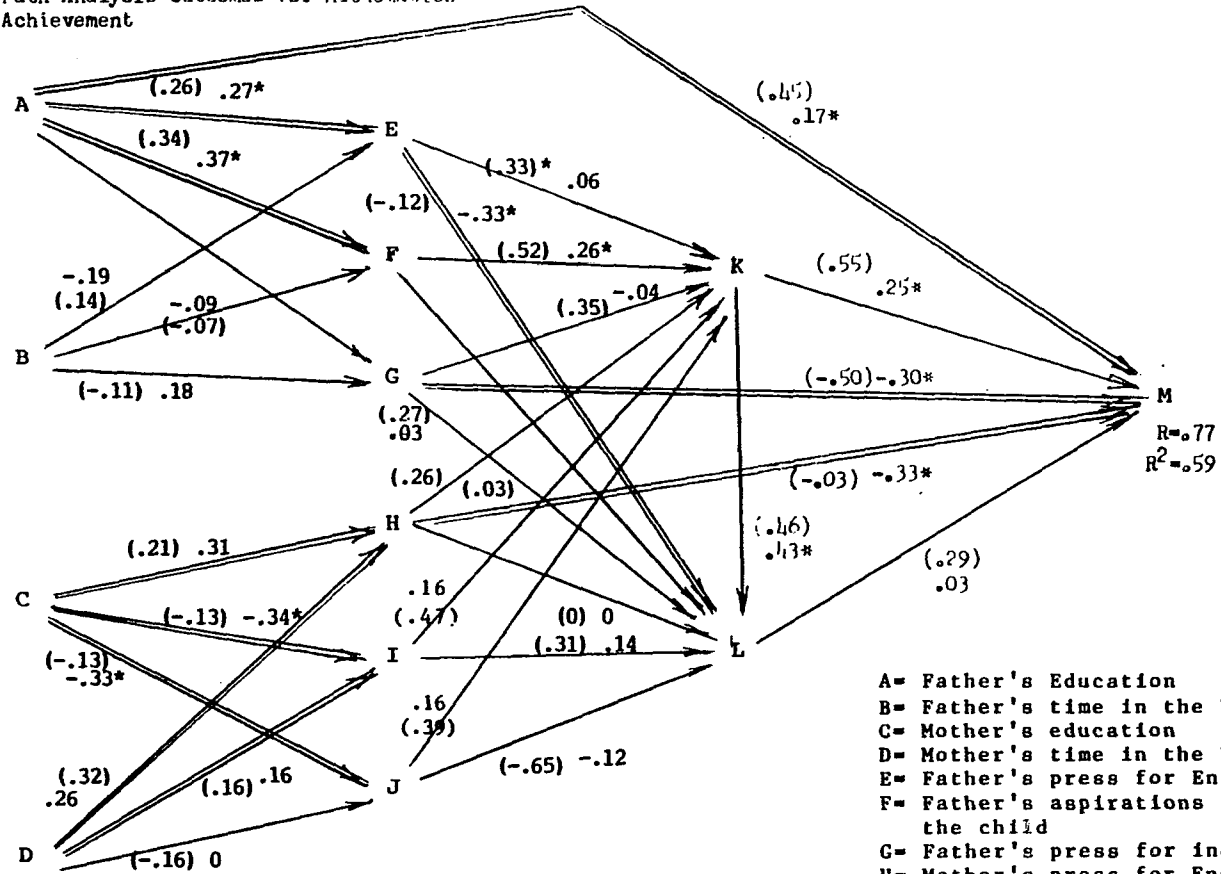


Figure 10

Path Analysis Outcomes for Mathematics Achievement



\*p < .05

- A= Father's Education
- B= Father's time in the U.S.
- C= Mother's education
- D= Mother's time in the U.S.
- E= Father's press for English
- F= Father's aspirations for the child
- G= Father's press for independence
- H= Mother's press for English
- I= Mother's aspirations for the child
- J= Mother's press for independence
- K= Child's aspirations
- L= Time the child spends on hmwk
- M= Academic Achievement

the results of the analysis with Mathematics Achievement as the lowest-level dependent variable. For each figure, the Pearson coefficients of correlation appear in parentheses and the path coefficients (standardized regression weights) appear outside parentheses. These figures depict the linkages postulated in the theoretical structure of this study. In addition, these figures depict linkages not previously postulated, but for which statistically significant Pearson correlation coefficients emerged.

Results of the path analysis related to Research Questions I through IV were interpreted in the light of one of several possible outcomes for each hypothesis tested. First, in the case of a hypothesis involving any of the independent variables, the results may show the absence of a significant positive correlation between the independent and dependent variables posited. In such a case, the hypothesis was considered to be unsupported. On the other hand, the results might show only the relationship hypothesized, in which case the hypothesis was considered to be supported.

Secondly, in the case of the higher-order variables (i. e., variables A, B, C and D in Figure 8, hypothesized to determine school achievement through mediation of other, intervening variables), the results might show a direct

relationship only. In such a case, the hypothesis was considered to be in need of modification, requiring the replacement of the postulation of indirect effect with one involving the observed direct effect. Alternatively, the results might show both direct and indirect effects, in which case the hypothesis was considered to be in need of modification, requiring the inclusion of effects in addition to the indirect effects postulated. The results of the analysis for each question will be discussed in detail; then, ancillary analyses following from the path findings will be discussed; finally, a summary presentation of the findings will be presented.

#### Research Question I

The first major research question of this study asked, Is there a relationship between time the student spends on homework or student educational aspirations on the one hand and academic achievement on the other? The hypothesis related to this research question was stated in the alternative form.

An examination of Figure 9 reveals that both student educational aspirations and time spent on homework are significantly correlated with achievement in Reading ( $r=.50$ ,  $p < .05$  and  $r=.37$ ,  $p < .05$ , respectively). After the effects

controlled, student aspirations did not contribute to the variability in achievement, but time spent on homework did ( $P=.11$ , NS and  $P=.27$ ,  $p < .05$ , respectively). An unexpected indirect effect of aspirations on achievement, through mediation of time spent on homework, emerged from the analysis ( $P= .12$ ). Thus, the hypothesis for Research Question I is accepted, with the additional stipulation of a mediational role played by time spent on homework between student aspirations and Reading achievement.

An examination of Figure 10 shows that relative to Mathematics achievement, while student time spent on homework and educational aspirations are significantly correlated with performance ( $r= .55$ ,  $p < .01$  and  $r= .29$ ,  $p < .05$ , respectively), this correlation remains high for aspirations but drops to zero for time spent on homework once the effects of other variables in the model are statistically controlled ( $P= .25$ ,  $p < .05$  and  $P= .03$ , NS, respectively). Thus, the hypothesis for Research Question I was generally supported; however, the effect of time spent on homework on Mathematics performance did not achieve significance.

---

\*  $P=$  Path coefficient

### Research Question II

The second major research question of this study asked, Is there a relationship between parental achievement processes and student academic processes?

An examination of Figure 9 reveals that, although both the father's and mother's achievement processes were correlated with their child's educational-occupational aspirations, only the father's measures were predictors of student aspirations when other variables in the model were statistically controlled. Specifically, father's educational-occupational aspirations for the child predicted the child's aspirations ( $\beta = .26, p < .05$ ); the father's press for English predicted the child's homework ( $\beta = -.33, p < .05$ ). Although the father's press for independence did not affect either of his child's academic processes, it did predict his child's reading achievement outcomes ( $\beta = -.33, p < .05$ ); it did not predict the child's mathematics performance. Thus, relative to Reading achievement, Research Question II is answered in the affirmative.

### Research Question III

The third major research question of this study asked, Is there a relationship between the educational level of each parents' time in the U. S. and their academic achievement

processes?

An examination of Figure 9 reveals a significant relationship between the educational level of fathers and their press for English ( $\underline{P} = .27, p < .05$ ), educational aspirations for the child ( $\underline{P} = .37, p < .05$ ), and press for independence ( $\underline{P} = -.37, p < .05$ ). In addition, there was a direct effect of the father's education level on the child's Reading achievement ( $\underline{P} = .32, p < .05$ ) and Mathematics achievement ( $\underline{P} = .17, p < .05$ ). There was no effect of fathers' time in the U. S. on their achievement processes for their child. There was no direct effect for any of these variables on Mathematics achievement.

For the mothers, their educational level influenced their press for English in the home ( $\underline{P} = .26, p < .05$ ), and their educational-occupational aspirations for their child ( $\underline{P} = -.16, p < .05$ ). However, the time in the U. S. by the mother was significantly related to all their achievement processes-- specifically press for English ( $\underline{P} = .34, p < .05$ ) child aspirations ( $\underline{P} = -.34, p < .05$ ) and press for independence ( $\underline{P} = -.34, p < .05$ ). There was no direct effect for any of these variables on either Reading or Mathematics achievement.

Thus, Research Question III is answered in the

affirmative.

### Results Related to Research Questions IV and V

#### Research Question IV

Research Question IV asked a) Do statistically significant differences exist in academic achievement between students of different Hispanic backgrounds? Originally, a two-way ANOVA was calculated among the three Hispanic groups on each of the academic achievement measures, with gender used as the row factor. However, no main or interaction effects were found for gender: For Reading, the gender's main effect was  $F(1,127) = .793, p > .05$ , and the interaction effect was  $F(2, 127) = 1.18, p > .05$ ; for Math, gender's main effect was  $F(1, 127) = .068, p > .05$  and the interaction effect was  $F(2, 127) = .248, p > .05$ . Thus, the sample was collapsed across gender and a one-way ANOVA was calculated to complete this phase of the analysis. Newman-Keuls post hoc comparisons were calculated to ascertain the specific groups between which significant differences obtained.

The means and standard deviations of Reading comprehension and Mathematics achievement grade equivalence deviation scores for three Hispanic groups appear in Table 11.

The three Hispanic groups differed significantly in Reading comprehension:  $F(2,130) = 70.55, p < .01$ . Subsequent post hoc comparisons revealed that Cuban and Central/South American students scored significantly higher on the Reading comprehension score than did Puerto Rican students. No significant difference was obtained between Cuban and Central/South American students.

The three Hispanic groups differed significantly in mathematics achievement as well:  $F(2, 130) = 31.42, p < .01$ . Subsequent post hoc comparisons revealed that Cuban and Central/South American students scored significantly higher on Mathematics achievement scores than did Puerto Rican students. No significant difference was obtained between Cuban and Central/South American students.

In the light of these findings, Research Question IV can be answered as follows: a) For selected Hispanic students in the U.S., differences do exist in the levels of academic achievement in Reading and Mathematics performance. More specifically, Cuban and Central/South American students tend to score significantly higher than do Puerto Rican students in the achievement and student/familial measures.

#### Research Question V

Research Question V asked, Are there statistically

significant differences in parent achievement processes based on their educational level and time in the U. S.?

The relationship between the parents' ethnicity and background variables was analyzed using three two-way ANOVA's for each parent achievement process variable (press for English, press for independence and educational-occupational aspirations for the child) for the father and mother separately. The decision to use two-way ANOVA's instead of one three-way ANOVA was based on the existence of empty cells in the three-way design. No such empty cells occurred when two-way analyses were used. The results of these analyses are presented in Table 14.

With regard to press for English, there was a main effect for the father's ethnicity,  $F(2, 132) = 18.12, p < .01$ . The Cuban fathers had significantly higher press for English in their homes than the Puerto Rican or Central/South American fathers. This finding was not qualified by the educational level of the fathers or their time in the U. S. The mothers for the three Hispanic groups also differed in their press for English,  $F(2, 132) = 34.37, p < .01$ . The Cuban mothers placed more stress on the use of English in the home than the Puerto Rican or Central/South American mothers. In addition, there was a main effect for mothers' educational

Table 14  
 Analysis of Variance F Statistics for Ethnicity and  
 Education Level \*

Parental Variable	Ethnic Group	Ed Level	Time in the U.S.	Eth x Ed	Eth x Time	Time x Ed
<b>Father's</b>						
Press for English	18.11					
Aspirations for the Child	4.46	4.27			20.86	
Press for Independence	37.47		5.65		2.68	
<b>Mother's</b>						
Press for English	34.37	4.85	3.37	4.79		
Aspirations for the Child					3.27	2.74
Press for Independence	37.47		4.76		5.65	

\* Only values significant beyond the .05 level. are reported.

level ( $F(2, 122) = 4.84, p < .01$ ) and an interaction between ethnicity and level of education.

With regard to press for independence, the fathers differed based on their Hispanic group,  $F(2, 132) = 47.56, p < .01$ , and time in the U. S.,  $F(2, 122) = 5.31, p < .01$ . In addition, there was an interaction between ethnicity and time in the U. S. ( $F(2, 132) = 2.68, p < .05$ ). The Cuban fathers showed greater press for independence than either the Puerto Rican or Central/South American fathers they lived in the U. S. 10 years or less, 15 years or less or 20 years or more. However, the Central/South American fathers allowed significantly more independence for the child than the Puerto Rican group when living in the U. S. less than 15 years. Puerto Rican and Central/South American fathers who lived in the U. S. 20 or more years were equal in their press for independence in their children.

The mothers' press for independence differed only on the basis of ethnicity,  $F(2, 132) = 6.136, p < .05$ . The Cuban mothers fostered more independence in their children than the Puerto Rican or Central/South American mothers. The Central/South American mothers were intermediate.

With regard to the parents' educational-occupational aspirations for their children, the fathers differed on the

basis of their ethnicity,  $F(2, 122) = 14.20$ ,  $p < .01$ ; their educational level,  $F(2, 122) = 6.82$ ,  $p < .05$ . Post hoc tests revealed that the Cuban fathers had higher aspirations than the Central/South American fathers, who in turn had higher aspirations than the Puerto Rican fathers. Furthermore, fathers who had a college education had significantly higher aspirations than for their children than fathers with a high school education. These high school educated fathers in turn surpassed those without high school education in their educational-occupational aspirations for their child.

In terms of the aspirations of the mothers for their children, there were no main effects for ethnicity, educational level or time in the U. S. There was, however, an interaction between ethnicity and time in the U. S. for the mothers,  $F(2, 112) = 3.27$ ,  $p < .05$ . For mothers who had lived in the U. S. for 10 years or less, the aspirations of Cuban and Central/South American mothers were higher than the Puerto Rican mothers'. Among parents in the U. S. 20 years or less, the Cuban mothers' educational-occupational aspirations for their children surpassed both the Central/South American and the Puerto Rican mothers. There were no differences in the aspiration levels of mothers who lived in the U. S. longer than 21 years.

Post hoc tests disclosed that the Cuban mothers displayed a high level of press for English for their children regardless of their own educational level. The Central/South American mothers showed a low level of press for English for their children regardless of their educational level. Puerto Rican mothers who had an elementary or high school education showed a significantly lower level of press for English for their children than did mothers who attended college.

## CHAPTER VI

## DISCUSSION OF RESEARCH FINDINGS

The following chapter includes an analysis and discussion of the results of the investigation. The limitations of the study will be examined and suggestions for further research in the area of academic achievement among Hispanic students in the U.S. will be offered.

Analysis and Interpretation of Results

The present study had two related goals: To determine the adequacy of a theoretical model based on Marjoribanks' Social-Environmental theory for accounting for academic achievement of selected Hispanic groups in U.S.; and to test certain hypotheses regarding differences in academic achievement among Hispanic groups in the U.S. Thus, the major goals of the study involved testing theory and ascertaining ethnic group differences. In the following sections, there will be a discussion of the extent to which the theoretical model for investigation was supported by the findings, the degree to which hypotheses related to Hispanic group differences were supported and implications of these findings for the education of Hispanic students in the U.S.

### Theory Testing

The theory-testing component of this research addressed the postulated causal linkages of the study's theoretical structure (see Figure 8), adapted from Marjoribanks (1979). To the best of this writer's knowledge, this is the first study to examine the academic performance of different Hispanic groups on the basis of 1) key child achievement processes (time spent on homework and student's educational-occupational aspirations), 2) the family achievement processes of fathers and mothers separately, and 3) each parent's background variables (time in the U. S. and parental educational level).

The results of the investigation showed that the proposed family process model can explain over half the variance in student achievement, 56 percent for Reading and 59 percent for Mathematics. Further, the results suggested that for the Hispanic groups studied, processes associated with the father play the key role in determining the achievement of the offspring. Although the mothers' achievement processes were correlated with those of the fathers' and with the child's educational aspirations, they did not play as important a causal role. There are several possible explanations for the impact of fathers' achievement

processes. First, it is possible that the father chooses his spouse due to the conformance of her educational philosophy to his. Or, second, the fathers in Hispanic families may have a stronger impact than the mothers due to the patriarchal nature of the family structure. This possibility is consistent with suggestions by Bailey (1960) and Alba (1969), who characterized the Latin American family as patriarchal and controlled in major respects by the father. It remains to be seen whether other, non-Hispanic families exhibit the same degree of patriarchal orientation as the Hispanic families examined in this study. It is not possible to determine which of these answers is most likely from the parent data, and this should be investigated in further study. The results showed that student educational-occupational aspirations were directly related to their academic achievement, and that homework, where important, was affected by student aspirations. Student aspirations were in turn more related to their parents' educational-occupational aspirations for their children, particularly in their fathers'.

In summary the model for investigation based on Marjoribanks' (1979) Social-Environmental formulation did prove adequate for accounting for academic achievement in the

population under study. These findings justified the use of the higher-order variables in the theoretical structure to address the major questions of the investigation. In general, college-educated parents showed higher parental achievement processes than parents without college education, and the parents' time living in the U. S. was complexly related to their achievement processes. The relationship between parents' time in the U. S. and their use of each achievement process differed for each parental process. Although some of these correlations achieved statistical significance, they varied greatly in direction. As a result, no general conclusions could be drawn about the role of this variable.

#### Ascertainment of Group Differences

The second purpose of this study involved two parts:

- a) to examine the degree of similarity in academic performance among selected Hispanic groups in the U.S. And
- b) to ascertain whether the familial factors underlying school performance differ for Hispanic groups. Examination of the effects of the achievement processes of Hispanic subgroups showed that the Cuban fathers displayed significantly higher levels of press for English, press for independence and educational-occupational aspirations than

Central/South American fathers who in turn generally surpassed the Puerto Rican fathers in terms of press for independence and educational-occupational aspirations for their children.

#### Summary

These data suggest that family processes play a critical role in the academic achievement of Hispanic students. Knowing the importance of parents' press for English, press for independence and educational-occupational aspirations for their children greatly assists one in predicting the children's academic achievement. These data support the notion that the Hispanic family's achievement processes may be affected by the patriarchal structure of the family and that improvement of the potential for achievement may depend on improvement of the achievement processes of the Hispanic father.

These data indicate three major things about Hispanic families in the U. S. and the academic achievement of their children:

1. The children's academic achievement is greatly influenced by their family's processes.
  2. The path analysis revealed a pattern of patriarchal influences in the parental background variables and family
-

processes. The precise nature of this relationship is an issue needing further study.

3. Fathers in the highest-achieving of the three Hispanic groups (the Cubans) consistently displayed the highest levels of parental achievement processes.

#### Implications of the Research Findings

#### Limitations of the Study

In drawing generalizations from the present findings to the Hispanic population in the U. S. in general, four major limitations of this study must be kept in mind: First, only three Hispanic groups were examined in the present investigation. Second, the sample was drawn from one geographic location, i. e., New York City. Third, the sample was restricted to students in the 10th grade. And Fourth, causal relationships among key variables were assumed to exist based on the outcomes of the path analyses. However, it is important to keep in mind that these observed relationships need to be ultimately tested using an experimental training methodology in order to formally qualify as causal. The present study indicates that the proposed causal relationships remain tenable even when other competing explanations are controlled statistically.

To more reliably make generalizations to Hispanics in the U. S., it is recommended that further research be conducted with Puerto Rican, Cuban and Central/South American students living in other parts of the country, as well as with Mexican-American students from the West and Southwest. It is also recommended that students of varying age groups be examined to ascertain the effects, if any, of age on the relationships of interest. It is also recommended that further research, of a longitudinal nature, be conducted to test the temporal components of the assumed causal effects in the present relationships.

#### Implications for Program Development

Two reasons were suggested for the failure of past attempts to remediate low academic performance among Hispanic students in the U. S.: a) The manner in which causes of underachievement have been studied (typically involving crude SES variables); and b) a tendency on the part of policy makers to view Hispanic groups in the U. S. as one single, undifferentiated group. The findings of the present study showed the value of using more refined measures of culture and parent-child processes underlying academic achievement (Bloom, 1964; Fraser , 1959). Moreover, the study's findings disclosed that the familial processes underlying the problem

---

of children's achievement in school do differ among the Hispanic groups studied. The implications for program development are clear: Academic remediation programs addressed to the U. S. Hispanic population must consider include a) the different degrees of underachievement among the Hispanic subgroups affected; and b) the unique set of familial and cultural interactions underlying the problem for each subgroup.

Finally, the data indicates that changes in family achievement processes appear to depend on educational level of the parents, particularly the father. This variable, of course, is difficult to change once the parents join the work force. However, the parent data clearly argue against Hispanic student educational programs that do not involve the parents to a substantial degree. In this respect, large-scale parental involvement community programs such as that used successfully by Smith (1965), in which working and non-working parents were trained to become more involved in the educational activities of their children, should become part of any such educational efforts.

## APPENDIX

## FAMILY INTERVIEW SCHEDULE (FIS)

The Family Interview Schedule (FIS) is a home interview instrument adapted for the present study from Marjorbanks' (1979) Family Environment Schedule. It is designed to assess the following components of the family environment as they impact on school achievement: Instrumental Orientations, Expressive Orientations and Educational-Occupational Aspirations.

Instrumental Orientations consist of Press for English, or the extent to which parents encourage and reinforce the use of the English language in the home; Expressive Orientations consist of the extent to which the home environment encourages in the child self-reliance and autonomy; and Educational-Occupational Aspirations consist of the amount of education and the types of occupation parents and their children to have.

The Family Environment Schedule on which the present interview questionnaire is based was constructed using factor-scaling methods. Responses to original versions of the questionnaire items were examined by means of principal components analysis, and items with factor loadings greater than .39 were refactored to maximize the reliability estimates

of the final scale. For the final subscales, theta reliability estimates were greater than .75 (Marjoribanks, 1979).

Part A of the FIS consists of items related to student age, gender and grade; and family's social background, including SES in the country of origin, time the family has resided in the U. S., SES in the U. S. and Hispanic group membership. Part B consists of items assessing Instrumental Orientations. Part C consists of items assessing Educational-Occupational Aspirations. Part D consists items assessing Expressin orientations. and Part E consists items addressed to the student, dealing with Educational-Occupational aspiratons and time spent on homework.

## FAMILY INTERVIEW SCHEDULE (FIS)

PART A

- A1. Case number  
 A2. Verbal test score (Test: \_\_\_\_\_)  
 A3. Math test score (Test: \_\_\_\_\_)  
 A4. Student's date of birth  
 A5. Parents in the household (1=No parents/2=Mother only/3=Father only/  
 4=Both)  
 A6. Father's ethnic background (1=P.R./2=Cuban/3=Central-South American/  
 4=White, non-Hispanic)  
 A7. Mother's ethnic background (1=P.R./2=Cuban/3=Central-South American/  
 4=White, non-Hispanic)  
 A8. Father's place of birth (1=P.R./2=Cuba/3=Central-South America/  
 4=U.S.)  
 A9. Mother's place of birth (1=P.R./2=Cuba/3=Central-South America/  
 4=U.S.)  
 A10. Student's place of birth (1=P.R./2=Cuba/3=Central-South America/  
 4=U.S.)

IF BOTH PARENTS WERE BORN IN THE U.S. GO TO A17

- A11. In what year did the father arrive in the U.S.?  
 A12. In what year did the mother arrive in the U.S.?  
 A13. What level of education did the father reach in the country of  
 origin?  
 A14. What level of education did the mother reach in the country of  
 origin?

GO TO A25

- A17. IDENTIFY THE PARENTS' DIRECT MALE AND FEMALE ANCESTORS WHO MIGRATED  
 TO THE U.S. AS ADULTS

Father's: \_\_\_\_\_ Mother's: \_\_\_\_\_  
           Male           Female                   Male           Female

- A17. What is the highest school year completed by the father's male  
 ancestor in the country of origin?  
 A18. What is the highest school year completed by the father's female  
 ancestor in the country of origin?  
 A19. What is the highest school year completed by the mother's male  
 ancestor in the country of origin?  
 A20. What is the highest school year completed by the mother's female  
 ancestor in the country of origin?

- A21. What is the highest school year completed by the father?  
A22. What is the highest school year completed by the mother?  
A23. What is the father's occupation?  
A24. What is the mother's occupation?

**PART B**

How often do you speak English in the home?

(1=never or hardly ever/2=less than half the time/3=half the time/  
4=over half the time (most of the time/5=all the time)

B1. Father's response

B2. Mother's response  
-----

B3. How often does X speak English in the home?

(1=never or hardly ever/2=less than half the time/3=half the time/  
4=over half the time (most of the time/5=all the time)

How particular would you say you are about the way X speaks English  
(good vocabulary, correct grammar... )?

(1=unable to help/2=don't really care/3=not too particular/  
4=quite strict/5=very strict)

B4. Father's response

B5. Mother's response  
-----

How particular would you say you are about the way X speaks Spanish  
(good vocabulary, correct grammar... )?

(1=unable to help/2=don't really care/3=not too particular/  
4=quite strict/5=very strict)

B6. Father's response

B7. Mother's response  
-----

B8. Did any adults live with you before X started school (i.e., adults  
who stayed longer than six months)?

(1=no other adults/2=just 1/3=2 or 3/4=4 or 5/5=more than 5)

B9. How often did these adults speak English in the home?

(1=no adults, or none spoke English/2=generally did not speak  
English/3=half English, half Spanish/4=mainly English, some  
Spanish/5=all English)

B10. How much time did X spend with these other adults?

(1=no other adults, or no time/2=not very much time/3=quite a lot  
of time/4=nearly all the time)

- B11. Do any adults live with now?  
(1=no other adults/2=just 1/3=2 or 3/4=4 or 5/5=more than 5)
- B12. How often do these adults speak English in the home?  
(1=no adults, or none spoke English/2=generally did not speak English/3=half English, half Spanish/4=mainly English, some Spanish/5=all English)
- B13. How much time does X spend with these other adults?  
(1=no other adults, or no time/2=not very much time/3=quite a lot of time/4=nearly all the time)

**PART C**

How much education do you want X to receive?

(1=leave school as soon as possible/2=finish high school, or as much education as possible/3=high school and some trade school/  
4=at least some college/5=graduate from college/  
6=postgraduate school)

C1. Father's response

C2. Mother's response  
-----

How much education do you really expect X to receive?

(1=leave school as soon as possible/2=finish high school, or as much education as possible/3=high school and some trade school/  
4=at least some college/5=graduate from college/  
6=postgraduate school)

C3. Father's response

C4. Mother's response  
-----

How long have you had these ideas about the amount of education you expect X to receive?

(1=just this year/2=since last year/3=just after X started school/  
4=before X started school/5=since X was born)

C5. Father's response

C6. Mother's response  
-----

What kind of job would you like X to have when he/she grows up?

(1=job requiring little education, or parents have low educational expectations (see previous questions)/2=job requiring some high school education/3= job requiring high school education and trade school/4= parents have high educational expectations/  
5= job requiring college degree (teacher, architect, etc.)  
6= job requiring postgraduate degree (doctor, lawyer, dentist))

C7. Father's response

C8. Mother's response  
-----

Do you think that X will become a (name the job just mentioned)?  
(1=no (I don't think so, father indicates that it's up to X, or  
father says he doesn't care)/2=I hope so/3=yes (empathically))

C9. Father's response

C10. Mother's response  
-----

How long have you had these ideas about the kind of job you would  
like X to have?  
(1=just this year/2=since last year/3=just after X started school/  
4=before X started school/5=since X was born)

C11. Father's response

C12. Mother's response  
-----

**PART D**

At what age did you or would you expect X to be allowed to do the following things by himself/herself?

Age: 6 7 8 9 10 11 12 13 14 15 16

- D1. To the father: earn own spending money
- D2. To the mother: earn own spending money
  
- D3. To the father: be able to undress and to go to bed by himself/herself
- D4. To the mother: be able to undress and to go to bed by himself/herself
  
- D5. To the father: to know his/her way around the neighborhood so he/she can play where he/she wants to without getting lost
- D6. To the mother: to know his/her way around the neighborhood so he/she can play where he/she wants to without getting lost
- D7. To the father: to make friends and visit their homes
- D8. To the mother: to make friends and visit their homes
  
- D9. To the father: to stay alone at home at night
- D10. To the mother: to stay alone at home at night
  
- D11. To the father: to make decisions like choosing clothing or deciding how to spend money
- D12. To the mother: to make decisions like choosing clothing or deciding how to spend money
  
- D13. To the father: to act as babysitter at some else's home
- D14. To the mother: to act as babysitter at some else's home
- D15. To the father: to sleep at a friend's home overnight
- D16. To the mother: to sleep at a friend's home overnight
  
- D17. To the father: go to the movies alone
- D18. To the mother: go to the movies alone
  
- D19. To the father: go on an overnight trip organized by the school
- D20. To the mother: go on an overnight trip organized by the school

How often do you think that 10 year-old children should be involved in making family decisions, such as what the family should do on weekends, where to go on holidays, what items of furniture should be brought for the home?

- (1=should never be consulted/  
 2= should rarely be consulted/  
 3= should be consulted on matters that affect them/  
 4= should be consulted on most family decisions/  
 5= should always be consulted/  
 other (specify))

D21. Father's response

D22. Mother's response

-----

How often do you think that 18 year-old children should be involved in making family decisions, such as what the family should do on weekends, where to go on holidays, what items of furniture should be brought for the home?

- (1=should never be consulted/  
 2= should rarely be consulted/  
 3= should be consulted on matters that affect them/  
 4= should be consulted on most family decisions/  
 5= should always be consulted/  
 other (specify))

D23. Father's response

D24. Mother's response

-----

How you react to the following statements ?

- 1= strongly disagree/2= disagree/3= neutral/4= agree/  
 5= strongly agree

Even when a boy gets married, his main loyalty is to his family.

D25. Father's response

D26. Mother's response

-----

When a girl gets married, her main loyalty still belongs to her parents.

D27. Father's response

D28. Mother's response

-----

When the time comes for a son to take a job, he should try to stay near his parents, even if it means giving up a good job opportunity

D29. Father's response

D30. Mother's response  
-----

When the time comes for a daughter to take a job, she should try to stay near her parents, even if it means giving up a good job opportunity.

D31. Father's response

D32. Mother's response  
-----

Nothing in life is worth the sacrifice of moving away from one's parents.

D33. Father's response

D34. Mother's response  
-----

**PART E****ASK THE STUDENT APART FORM THE PARENTS:**

- E1. How much education do you want to receive?  
(1=leave school as soos as possible/2=finish high school, or as much education as possible/3=high school and some trade school/  
4=at least some college/5=graduate from college/6=postgraduate school)
- E2. How much education do you really expect to receive?  
(1=leave school as soos as possible/2=finish high school, or as much education as possible/3=high school and some trade school/  
4=at least some college/5=graduate from college/6=postgraduate school)
- E3. What kind of job would you like to have when you grow up?  
(1=job requiring little education, or has low educational expectations (see previous questions)/2=job requiring some high school education/3= job requiring high school education and trade school/4= parents have high educational exepectations/  
5= job requiring college degree (teacher, architect, etc.)  
6= job requiring postgraduate degree-- doctor, lawer, dentist)
- E4. Do you think that you will become a (name the job just mentioned)?  
(1=no, I don't think so/2=I hope so/3=yes-- emphatically)
- E5. How much time do you spend on homework or schoolwork at home?  
(1=no time spent/2=about 15 minutes every day/3=about 1/2 hour most days/4=nearly an hour most days/5=more than an hour most days)

## REFERENCES

- Alba, V. (1969). The Latin Americans. N. Y.: Frederick A. Prager, Publishers.
- Anastasi, H. (1958). Heredity, environment and the question of "How"? Psychological Review, 65: 197-208.
- Bailey, H. M. (1960). Latin America. N. J.: Englewood Cliffs: Prentice-Hall, Inc.
- Bernstein, B. (1960). Language and social class. British Journal of Sociology 11, 271-276.
- Blau, P. M. & Duncan, O.D. (1967). The American Occupational Structure. New York: Free Press.
- Bloom, B. S. (1964). Stability and Change in Human Characteristics. N. Y.: Wiley.
- Bourdieu, P. (1973). Cultural reproduction and social reproduction. In R. Brown (Ed.): Knowledge, Education and Cultural Change, London: Tavistok.
- Brody, E. B. and Brody, N. (1976). Intelligence. Nature, Determinants and Consequences. N. Y.: Academic Press.
- Burt, C. (1963). The genetic determination of differences in intelligence: A study of monozygotic twins reared together and apart. British Journal of Psychology, 57, 137-153.

- Carver, R. P. (1975). The Coleman Report: Using inappropriately designed achievement tests. American Educational REsearch Journal, Winter, Vol. 12, No. 1, 77-86.
- Clarizio, H. F., Craig, R. C. and Mehrens, W. H. (1970). Contemporary Issues in Educational Psychology. Boston: Allyn and Bacon, Inc.
- Coleman, J. S., Campbell, E. O., Hobson, C. J., McPartland, J., Mood, A., Weinfeld, R. D. and York, R. L. (1966). Equality of Educational Opportunity. (OE-38001) Superintendent of Documents, Catalogue No. FS 5.238.338001). Washington, D. C.: U. S. Government Printing Office.
- CTB/McGraw-Hill (1976). Tests of Adult Basic Education. Monterrey, Cal.
- Deutsch, M. (1965). Some psychological aspects of learning in the disadvantaged. Teachers College Record, 67, 260-265.
- Duncan, O. D., Featherman, D. L. and Duncan, B. (1972). Socioeconomic Background and Achievement. N. Y.: Seminar Press.
- Elkind, D. (1961). The development of quantitative thinking. Journal of Genetic Psychology, 98, 36-46.
-

- Erlenmeyer-Kimling, L. & Jarvik, L. F. (1963). Genetics and intelligence: A review. Science, Vol. 142, 1477-1479.
- Fennema, E. and Sherman, J. (1977). Sex-related differences in mathematics achievement, spatial visualization and affective factors. American Educational Research Journal, 14, 51-71.
- Fraser, E. D. (1959). Home Environment and the School. London: University of London Press.
- Gordon, M. M. (1978). Human Nature, Class and Ethnicity. N. Y.: Oxford University Press.
- Guilford, J. P. (1967). The Nature of Human Intelligence. N. Y.: McGraw-Hill.
- Guilford, J. P. and Fruchter, B. (1973). Fundamental Statistics in Psychology and Education. N. Y.: McGraw-Hill.
- Herrnstein, R. J. (1971). I.Q. in the Meritocracy. Boston: Little, Brown and Company.
- Hess and Shipman, V. (1965). Early experience and the socialization of cognitive modes in children. Child Development, 36: 869-886.
- Hunt, J. (1961). Intelligence and Experience. N. Y.: Ronald.

- Jackson, P. W. and Lahaderne, H. M. (1976). Scholastic success and attitude toward school in a population of 6th graders. Journal of Educational Psychology, 58, 15-18.
- Jaffe, R. J., Cullen, R. M. and Thomas, D. (1980). The Changing Demography of Spanish-Americans. N. Y.: Academic Press.
- Jensen, A. R. (1968). Social class, race and genetics: Implications for education. American Research Journal, 5(1): 18-23.
- Jensen, A. R. (1968). Social class, race and genetics: implications for education. American Research Journal, 5(1), 18-23.
- Jensen, A. R. (1980). Bias in Mental Testing. N. Y.: The Free Press.
- John, V. P. (1963). The intellectual development of slum children. American Journal of Orthopsychiatry, October, 33(5), 813-822.
- Johnson, D. M. (1948). Applications of the Standard-Score I. Q. to social statistics. Journal of Social Psychology, 27, 217-227.

- Juel-Nielsen, N. (1965). Individual and environment: A psychiatric-psychological investigation of monozygotic twins reared apart. Acta Psychiatrica et Neurologica Scandinavia. Monograph Supplement, 183.
- Kamin, L. S. (1974). The Science and Politics of I. Q. Potomac, Maryland: Lawrence Erlbaum Associates.
- Keeves, J. P. (1972). Educational Environment and Student Achievement. Stockholm: Almqvist and Wiksell.
- Keith, T. Z., Reimers, T. M., Fehrmann., P. G., Potterbaum, S. M., and Aubey, L. W. (1986). Parental involvement, homework, and TV time: Direct and indirect effects on high school achievement. Journal of Educational Psychology, Vol. 78, No. 5, 373-380.
- Kellaghan, R. (1977). Relationships between home environment and scholastic behavior in a disadvantaged population. Journal of Educational Psychology, 69, 754-760.
- Marjoribanks, K. (1976). Social learning theory of the family. Psychology in the Schools, 3(4), 457-462.
- Marjoribanks, K. (1979). Ethnic Families and Children's Achievements. Boston: George Allen and Unwin.
- Merton, R. K. (1968). Social Theory and Social Structure. N. Y.: The Free Press.

- Murray, H. (1948). Explorations in Personality. London: Oxford University Press.
- Nielsen, F. and Fernandez, R. (1981). Achievement of Hispanic Students in American High Schools: Background Characteristics and Achievement. Washington, D. C.: National Center for Education Statistics.
- Newman, H. H., Freeman, F. N. and Holzinger, K. J. (1937). Twins: A Study of Heredity and Environment. Chicago: Chicago Press.
- Norusis, M. J. (1985). SPSSx Advanced Statistics Guide. N. Y.: McGraw-Hill Book Company.
- Pines, M. (1967). Revolution in Learning. N. Y.: Harper and Row.
- Rosenthal, R. and Jacobsen, L. (1968). Pygmalion in the Classroom: Teacher Expectation and Pupils Intellectual Development. N. Y.: Holt, Rinehart and Winston.
- Shields, J. (1962). Monozygotic Twins Brought up Apart and Together. London: Oxford University Press.
- Smith, M. B. (1968). School and home: Focus on achievement. In A. A. Parson (Ed.): Developing Programs for the Educationally Deprived. N. Y.: Teachers College Press.
- Spearman, C. (1927). The Abilities of Man. N. Y.: McMillan.

- Thompson, G. H. (1951). The Factorial Analysis of Human Ability (5th ed.). Boston: Houghton-Mifflin.
- Thorndike, E. L. (1927). The Measurement of Intelligence. N. Y.: Teachers College Press.
- U. S. Department of Education (1983). Federal Funds for Education, 1981. Washington, D. C.: U. S. Government Printing Office.
- Walberg, H. J. and Marjoribanks, K. (1973). Differential mental abilities and home environment. Developmental Psychology, (7)3, 367-368.
- Weber, M. (1948). From Max Weber: Essays in Sociology. H. H. Gerth and C. W. Mills (Eds.). London: Routledge and Kegan Paul.
- Weinberg, M. (1977). Minority Students: A Research Appraisal. Washington, D. C.: Department of Health, Education and Welfare.
- Zamm, M. (1975). Reading disabilities: A theory of cognitive integration. Journal of Learning Disabilities, 6(2), 41-47.
- Ziegler, E., Abelson, W. D. and Seitz, V. (1973). Motivational factors in the performance of economically disadvantaged children on the Peabody Picture Vocabulary Test. Child Development, 44, 295-303.