1977

Is There a Significant Gain in Language Development for Children Attending Summer Head Start Programs Beyond the Ten Month Session?

Evelyn A. Green  
*Loyola University Chicago*

---

**Recommended Citation**

http://ecommons.luc.edu/luc_diss/1705

This work is licensed under a Creative Commons Attribution-Noncommercial-No Derivative Works 3.0 License.  
Copyright © 1977 Evelyn A. Green
IS THERE A SIGNIFICANT GAIN IN LANGUAGE DEVELOPMENT FOR CHILDREN ATTENDING SUMMER HEAD START PROGRAMS BEYOND THE TEN MONTH SESSION?

By

Evelyn A. Green

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

June 1977
DEDICATION

This dissertation is dedicated to "The Troika", Barbara Bowman, Maria Piers and Lorraine Wallach, learned founders of Erikson Institute for Early Education; and to my daughters, Cheryl and Robin, captive "subjects" for my many early childhood education experiments throughout the years. The loving support and encouragement of my husband, Aaron, has made completion of the project a reality.
ACKNOWLEDGEMENTS

The author acknowledges the support of her doctoral committee, Dr. Barney Berlin, Dr. Maria Piers and Dr. Jasper Valenti, and the extensive guidance provided by committee member Dorothy Anker throughout the development of the project.

A special note of gratitude is given to Dr. Robert Cienkus for his assistance in development and interpretation of the statistical data, and to John Link for his service as research assistant in programming the data for computer analysis.
TABLE OF CONTENTS

DEDICATION .................................................................................. ii
ACKNOWLEDGEMENTS ................................................................. iii
LIST OF FIGURES AND TABLES ....................................................... iv

Chapter

I. INTRODUCTION ................................................................. 1

Overview of Project Head Start

Brief History of Head Start in the Chicago Public Schools

Current Concepts Regarding the Importance of Language Development in Prekindergarten Education

Statement of the Problem

Need for the Study

Definition of Terms

Hypotheses

Limitations of the Study

Significance of the Study

II. REVIEW OF RELATED RESEARCH AND LITERATURE ...................................................................... 16

Status of Areas Under Investigation

Research Reporting Gains in Language Development for Preschool Children

The Teacher Factor in Prekindergarten Language Development Programs

Research Evaluating the Role of High Structure Classroom versus Low Structure Classrooms in Relation to Pupil Gains in Language Development-Prekindergarten years

Reports Concerning Gains Made by Bi-Lingual Head Start Children in Summer Portions of Year-round Programs
Studies and Reports Concerned with the Effects of Race and Social Class on Language Development of Young Children

Research Reviewing Evaluations of the Chicago Public School Head Start Program

Reports Concerning Availability of Funding for Preschool Programs

Summary

III. DESIGN AND PROCEDURES ........................................ 55

Design
Subjects
Instruments
Procedures
Assumptions
Statistical Treatment

IV. FINDINGS AND INTERPRETATION OF DATA .............. 66

12-Month Change (Gain) Scores
10-Month Scores
Summary of Findings

V. CONCLUSIONS, SUMMARY AND RECOMMENDATIONS ...... 82

BIBLIOGRAPHY .......................................................... 87
APPENDIX A ............................................................. 95
The Teacher Structure Checklist ................................ 96
Scoring the Teacher Structure Checklist ..................... 97
Questionnaire for Head Start Teachers ......................... 99
APPENDIX B ............................................................. 103
Report of Investigation of Possible Interaction Effects Between the Major Variables Under Investigation in the Study ........... 104
# LIST OF FIGURES AND TABLES

<table>
<thead>
<tr>
<th>Figure or Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table I - Predicted Change When 10-Month Score is 50</td>
<td>65</td>
</tr>
<tr>
<td>Table 2 - F Statistics for 4 Major Hypotheses Tested - Predicted Change when 10-Month Score is 50</td>
<td>68</td>
</tr>
<tr>
<td>Table 3 - Sub-Hypotheses of H₁ - Comparisons of Change Scores According to Length of Attendance</td>
<td>72</td>
</tr>
<tr>
<td>Table 4 - Sub-Hypotheses of H₃ - Comparisons of Change Scores According to Linguality</td>
<td>77</td>
</tr>
<tr>
<td>Table 5 - Mean 10-Month Scores</td>
<td>79</td>
</tr>
<tr>
<td>Table 6 - A Comparison of Mean 10-Month Scores According to Classroom Structure</td>
<td>80</td>
</tr>
<tr>
<td>Figure I - Upper and Lower Bounds of the Change Score as a Function of the 10-Month Score</td>
<td>101</td>
</tr>
<tr>
<td>Figure II - Estimated Regression Lines for 12 Parameters to be Tested</td>
<td>102</td>
</tr>
<tr>
<td>Table A - Estimation of Unconstrained Model</td>
<td>107</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

Overview of Project Head Start

The Head Start program was launched in 1965 with government funding under the Economic Act of 1964, Public Law 88-452, for preschool centers sponsored by public and private agencies. Approximately 561,000 children attended classes for six or eight weeks during the summer of 1965 in 2,500 centers throughout the country. 575,000 were served in the summer of 1966, and during that year 171,000 were served in full-year programs.

From the beginning public school systems assumed a leadership role in the establishment of Head Start centers. A report by the research division of the National Education Association (1968) indicated that 292,432 children, or a little over half of the children enrolled in summer Head Start programs in 1966 were in public schools. An additional 57,000 children were enrolled in full year programs sponsored by public schools in 1966.

Head Start was based upon the philosophy that "(1) a child can benefit most from a comprehensive inter-disciplinary attack on his problems at the local level and (2) the child's entire family, as well as the community, must be involved in solving his problems." (Office of Child Development, 1967, p.1)
Program components were established by guidelines as (1) Curriculum (2) Medical (3) Dental (4) Social Services (5) Psychological Services (6) Nutrition (7) Volunteer Service (8) Parent Involvement and Education and (9) Career Development and Training for Staff.

The federal government identified grass roots community participation in and direction of the program as its prime objective. However, the public soon read into the project name "Head Start" an assumption that eight summer weeks or one full year of preschool experience for children of poverty would be more than enough to overcome the handicaps such children inherit by virtue of their birth into deprived circumstances. There followed a plethora of Head Start studies, led by the now famous "Westinghouse Study" (Circirelli, Evans & Schiller, 1969) which attested that initial gains made by Head Start children in the preschool cycle were not maintained beyond the third year of the primary cycle (commonly called grade three.) Head Start was labeled a failure.

Former Head Start children were evaluated in the first, second and third grades, and compared with control children who had not attended Head Start classes. In summary, the Westinghouse Report noted that on the first test, a test in language development, Head Start children did not score significantly higher than control children. In readiness for learning Head Start children scored better than control children, and on the
Stanford Achievement Tests no differences were found between the two groups. In conclusion, the report said summer Head Start programs were ineffective and that year-round programs should be given priority over summer projects. The report stated that the program would have to last longer and begin earlier in order to be effective, and that language development and parent involvement in terms of training parents to teach their children would have to be given greater emphasis if the program was to be successful.

Emotions were mixed in terms of the costs of Head Start. In the summer of 1965 a total of 95 million dollars was spent nationwide, or about $168.00 for each child for the eight week period, ($21.00 per week). Year-round program costs were estimated at $750.00 to $1,000.00 per child. This figure exceeded $2,000.00 per child as the program was implemented in the Chicago Public Schools with the medical component included. The creation of employment in the communities was heralded as a plus, while the seemingly negligible gains that could be maintained at such a mammoth expenditure were deemed unjustifiable. By 1976 the national yearly Head Start budget had grown to $450 million dollars.

On November 17, 1976 the Chicago Board of Education approved a budget proposal for submission to the government funding agency requesting a total of $5,103,893.00 to provide a twelve month Head Start program for 3,652 children from
December, 1976 through November, 1977. ($3,400,000 federal share; $1,703,893 nonfederal share.) If approved as submitted this proposal would carry a per pupil cost of $1,397.56 without the medical component, which is budgeted separately.

The arguments continue. Can we afford such an expensive program in terms of the yield in measurable gains made by children in the academic sphere? Can the summer portion of the program be justified in view of depressed school funding nation-wide in these years of escalating educational costs?

**Brief History of Head Start in the Chicago Public Schools**

The Head Start program was initiated in the Chicago Public Schools with the opening of five ongoing centers in March, 1965. By June of 1965 federal funding had been allocated for a summer Head Start program to serve 20,000 prekindergarten children from poverty areas in Chicago. (Chicago Public Schools, 1970) A concentrated training program for teachers and aides was presented by Roosevelt University in Chicago at the beginning of the 1965 summer session, and door-to-door recruitment of children in poverty areas was conducted by staff to fill the centers. During the first year a number of college students were employed as teacher-aides, thus providing well trained paraprofessionals to work with Chicago's Head Start children.
By 1975 there were eighty-three Head Start classes operating in 81 Chicago public schools. A maximum of 3,562 children were being served in these centers in two half-day sessions of three hours each. Initially the curriculum approach reflected the traditional nursery school orientation with eclectic selection of individual approaches available to staff in the various centers. Packaged approaches selected by the centers included, but were not limited to, the Bereiter-Engelmann academic school method and the Distar program, Swirl, The Peabody Language Development Kit, and aspects of the British Infant School's open-classroom approach. Highly structured approaches were selected most often. Classes were staffed with certified teachers, two salaried aides per class and volunteers. Initially the maximum enrollment per class was set at fifteen children. This figure was later enlarged to a maximum of twenty-two children per class. A cadre of administrators and special staff personnel provided leadership and inservice training for staff in the various components of the program.

Current Concepts Regarding the Importance of Language Development in Prekindergarten Education.

Language training objectives form a universal part of prekindergarten programs at all socio-economic levels in the United States and, indeed, throughout the world. Our knowledge of the discipline has increased, but there are
still many gray areas. Cazden (1973) reminds us that "to date we know far more about the child's acquisition of linguistic rules than about his acquisition of sociolinguistic rules, and the two processes may be quite different. About the acquisition of linguistic rules, we know that, during the most dramatic language learning period from two to five years old, children are not taught syntax directly." (p.135) She goes on to stress that language is a difficult subject for curriculum builders because although it can be learned by children it cannot be taught to them. Cazden sees language teaching moving away from a teacher-centered approach to one that is learner-centered.

Early assessments of language development in Head Start children tended to favor highly structured programs for maximum language growth in children of poverty. In her review of Head Start studies on language Grotberg (1969) concluded:

The studies on language of disadvantaged children suggests that their language development is generally below that of middle class children. Environmental factors seem to account for a large portion of the difference; however, ethnicity may account for variation among sub-populations. One study found higher verbal performance among inner-city preschool boys than girls. Foreign language speaking parents and bilingual children do not appear to be handicapped in terms of intelligibility and articulatory status of their language performance. Further, the language behavior of the parents is a more reliable predictor of children's language behavior than socioeconomic factors....Experiments in language programs suggest
that children benefit from many kinds of language interventions, but that a more structured program is generally more effective than an unstructured one; when significant gains are found, they tend to be found as a result of a more structured curriculum. (p.8)

In presenting a historical overview of methodologies for teaching reading Schreiner and Tanner (1976) mention current emphasis on attention to aural aspects of language in early instruction. They point out that in addition to being verbal and acquired by listening and speaking, language competence cognitive skills provide the basis for learning to read. Teachers are urged to spend more time developing and improving oral language skills as a foundation for reading instruction. The need to develop diagnostic tools for assessing oral language in relation to mastery of reading skills is also stressed.

Several studies have attempted to apply the Bereiter-Engelmann (1966) method for the purpose of language training, and their results are mixed. One study was carried out by Classen, Spear, and Tomaro (1969) in which half of 30 children coming from low-income families were assigned to a concentrated language training program during an eight-week summer Head Start project, while the other 15 children were assigned to a more conventional, socially oriented program in which language training was purely incidental within the context of other activities. The authors found
no significant differences between experimental and control
groups on IQ scores. However, children who received intensive
language training were significantly superior on the Illinois
Test of Psycholinguistic Abilities to children who attended
the control program. The authors concluded that focused
programming produces results which are superior to conventional
programming in those skills which were the focus of the program.
It should be noted that the sample for this study was quite
small.

In a comprehensive review Edmonds (1976) covers a
variety of theories of language acquisition involving syntax,
nativistic explanations, the growth of language related to
the attainment of particular Piagetian stages (sensori-motor
to preconceptual) and semantic systems developed in early
childhood. She concludes that a multidisciplinary approach
using and combining cognitive, linguistic and developing
mother-child interaction pattern theories must be used to
explain how children acquire language. Edmonds' most
important point, for the purposes of this study, is her
renewed focus on the social perspectives of the early
language acquisition process. Socialization of the child
is a basic goal of the Head Start program, and it is this
nurturing of communication skills in concert with positive
affective development that constitutes the major contribution
of the program.
Statement of the Problem

This study was designed to measure the value of Head Start programs carried beyond ten months in terms of additional gains in language development demonstrated by the subjects. In recent years there has been growing concern regarding budgeting Head Start for twelve months in the Chicago Public Schools. Although there is no question that children continue to benefit from most program components over the summer, the question of overall development in terms of preparation for school (academic readiness) continues to be asked.

Language development is considered to be the most important factor in readiness for success in formal school attendance. Do children make rapid strides in language development during the weeks of the summer enrichment program? In fact, do they make significant measurable gains beyond the ten month program? Is there great loss by the children who do not attend the summer session? The investigator proposes to answer these and other inquiries and to provide a useful source of data for administrators planning future prekindergarten programs.

The effects of high versus low classroom structure upon achievement and maintenance of gains over the summer session will be a sub-problem under investigation in this study. Available research continues to indicate that children gain
most in highly structured settings, while many early childhood education theorists claim that gains and understandings developed in low structured settings are more lasting. Teaching styles will be assessed and classified through use of a Teacher Structure Checklist. Teacher self-evaluations, together with observations by the investigator, will provide the basis for defining the six groups as high or low structured in classroom climate.

Bilingual populations are increasing in most American cities, with the principal increase being Spanish speaking citizens. One of the centers selected randomly to participate in this study is populated with bilingual Head Start children. A final sub-program will be the evaluation of language development achieved by the bilingual children as compared with gains made by the entire group.

Need for the Study

To date there have been no published studies to evaluate the merit of the summer portion of ongoing Head Start programs in terms of increased language development skills exhibited by the children. Generalizations have been made by government evaluation committees suggesting the programs of eight months duration are adequate for achieving maximum school readiness, and that escalating program costs do not warrant support for summer sessions of the Head Start program.
A crisis was reached in the summer of 1975 when funding for the summer weeks of the ongoing program was not available to the Chicago Public Schools. Faith in the value and need for continuation of the program through the summer led the administrators to provide for funding of the program with Elementary and Secondary Education Act (ESEA) funds. Nutrition aides (one per classroom) were released and replaced with paraprofessionals who were funded through the Comprehensive Education Training Act (CETA) program to reduce the budget. The program name was changed for the summer from Head Start to PreReading Program and fewer children were served, but the teaching staff was not reduced.

Although the original federal funding for the summer portion of the Head Start program was restored for the 1976 school year, certain curtailments were planned in order to reduce the budget.

In a document detailing recommendations for activities and programs for the summer of 1976 (Chicago Board of Education, 1976) the General Superintendent of Schools projected a cost of $370,126.00 to serve 3,652 students with a staff of 119 teachers and 123 career service employees. The description was as follows:

Head Start is a full year preschool child development program providing service to 3,652 economically disadvantaged 3½ - 5 year old children and their parents. Centers located in 81 schools throughout the city during the regular school year will be clustered
whenever possible for a six-week summer session. Half-day classes at each site will be operated in the A.M. only. All currently enrolled students will be provided with the opportunity to participate in the program. Each class will be staffed with a teacher and a teacher aide. Volunteers and CETA workers will augment the classroom staff in order to maintain an adult/pupil ratio of one to five. Auxiliary services are provided by coordinators, parent development teachers, social workers, and parent/social service aides. Nutrition and health services and field trips are provided for the children without charge.

At this writing the future of the summer portion of the Head Start program in public and private agencies is uncertain, and detailed evaluations of the effectiveness or lack of same for this portion of the program are sorely needed. This study is an attempt to offer one source for meeting that need.

**Definition of Terms**

Children enrolled in six Head Start centers were evaluated with the TOBE Language Development Test (Moss, 1970) at the end of ten (June) and twelve (September) program months. In the ensuing discussion "attenders" will be used to designate those children who had 12 months of instruction (in attendance from September, 1974 through August, 1975) and "non-attenders" will be used to designate those children who were enrolled for ten months (September, 1974 through June, 1975, not in attendance during the summer weeks, and evaluated in September, 1975 along with the attenders). This last group will serve as a control group for a number of comparisons.
"High structure classes" will be used to designate those centers wherein the basic approach and/or teaching style was formal with a high degree of direct teaching, and "low-structure" will be used to identify centers wherein the primary mode of instruction was the discovery approach, with an open classroom orientation.

The four null hypotheses to be tested are as follows:

**Hypotheses**

**Hypothesis 1** There will be no significant difference in the TOBE gain scores between 10 month and 12 month children.

**Hypothesis 2** There will be no significant difference in the change scores of children instructed in high structure classes as opposed to those instructed in low structure classes when evaluated in June at the end of 10 months.

**Hypothesis 3** There will be no significant difference in the TOBE test gain scores observed between the bilingual and all other groups of children completing 12 months of instruction when their June and September scores are compared.

**Hypothesis 4** There will be no significant difference in change scores from June to September
between boys and girls when their ten
month and twelve month scores are compared.

In addition, six sub-hypotheses were developed from
hypothesis 1, and four sub-hypotheses were developed from
hypothesis 3. These hypotheses will be stated and reviewed
in the fourth chapter, Findings.

Limitations of the Study

Head Start is a comprehensive program with nine major
components thought to be of equal value. The study will
be limited to consideration of measurable gains demonstrated
by the Head Start children in six centers as identified by
scores on the TOBE language development test. Four factors
will be considered in the analysis of these test scores:
(1) length of time spent in the program (2) degree of
structure in curriculum presentations by six teachers
(3) effects of bilingualism in language development rate
over the summer and (4) sex differences.

The bilingual population used was Mexican-American.
Test results might not be the same for other bilingual
populations and the reader is cautioned about generalizing
these results.

Significance of the Study

This study purports to supply hard data for the
objective evaluation of language development gains made
by children in the Head Start program when they are in attendance beyond ten months. The data should be of considerable value to administrators in planning prekindergarten programs that must be budgeted in terms of time and money.

Administrators and teachers planning prekindergarten programs for bilingual children should find the data of value in scheduling the length of programs to be offered, identifying probable times of most rapid growth in language development, and assessing the possible degree of loss of language training when instruction is interrupted for the summer months.
CHAPTER II

REVIEW OF RELATED RESEARCH AND LITERATURE

Status of Areas under Investigation—Need for Research

Biber (1969), Butler (1970), Datta (1970) and Hunt (1974) have pointed up the need for more limited, focused studies for evaluation of Head Start programs, following numerous grand-scale overview-type evaluations. The evolution of major philosophies concerning the value of early childhood education programs in America moves from Hunt (1961) and Bloom (1964) rejecting theories of fixed intelligence by virtue of heredity, and their affirmation of the rapid and high quality of cognitive development which can be achieved by children under age five; to Bronfenbrenner (1972) Jencks (1972) and Kagan (1972) identifying the family, bolstered by support systems provided by institutions of society, as the most able instrument for development of the early child intellect. Kagan's recent report (1973) of his research with eleven year old Guatemalan children and the reversal of deficits caused by early isolation and lack of perceptual stimulation during infancy indicated that later age intervention could be successful. Current theorists, led by Bronfenbrenner (1972) and Jencks (1972), are not negating the worth of prekindergarten programs, but are asking that they be redefined as support systems that can only be effective when the home and other social institu-
tions are taken into account and given first-order responsibility for development of the very young child.

In a two part report Reiff and Pere (1965) deplore the lack of language research reports for the Summer 1965 Head Start programs, stating that "not one shred of systematically gathered, linguistically interesting data is available in any of the 1965 research project reports." (p.29) This early lack of reports has been eliminated in later years, but research devoted to length of program effects on language development is still minimal in the year 1976.

In presenting a lengthy, detailed evaluation design for determining the readiness of Head Start children for formal schooling in terms of social competence Raizen, Bobrow, Bikson and Butler (1974) emphasize the need for focused, small-scale studies as an adjunct to national evaluations. One section of the design dealt with the assessment of perceptual motor, cognitive and language development skills. The authors concluded that sequencing was most important in these areas and that long interruptions in the programs had negative effects on the maintenance of gains.

There is now a growing body of evidence available on the long-term effects of preschool programs on language skills and cognitive development. In general, some sustained gains have been documented in language and cognitive skills
under two conditions: a preschool program that is specifically designed and controlled to achieve performance gains, and continuity of intervention across preschool and primary grades. Both Ryan (1974) and Bronfenbrenner (1974) point out that substantial gains achieved in the first year of group intervention programs usually wash out once the program is discontinued.

Research Reporting gains in Language Development for Preschool Children

A recent study which closely parallels this current investigation was conducted by Halasa and Fleming in the Cleveland Public Schools (1973). The Cleveland Head Start program operated under OEO funding until February, 1966, when it was transferred to Title I. The project was renamed Child Development Project, but the Head Start name was retained for the summer OEO-funded preschool program. The Cleveland Child Development program grew from 12 to 37 centers from 1966 to 1967 and served approximately 1,700 children. The Head Start Program under OEO funding continued to operate during the six-week summer program until its termination in August, 1969. At the time of the survey (1971-72) the Child Development Project served a total of 1,887 children who attended 90 classes in 45 centers. The project operated two sessions daily, a morning and an afternoon session. Children attended either one of these two
sessions for four days a week, Tuesday through Friday. The remaining day was devoted to staff development and parent involvement activities. The major emphasis during the 1971-72 school year continued to focus on staff development through in-service workshops. Cleveland Public schools spent $705.00 per child, a total of $1,176,711.00 per program year on the Child Development Project for a six year period.

Halasa and Fleming asked three questions: (1) Were there significant changes in children's achievement at the end of the project participation? (2) Are there evident differences in groups tested over an eight-month and over a five-month period? and (3) What are the impressions of project staff? It is the second question which is of importance for this study.

In making an assessment of change over an eight-month period two groups of children were tested on the Test of Basic Experiences (TOBE) General Concepts, Language, and Mathematics subtests. The time of pre-testing differed for the two groups, although both were post tested at the same period. The two groups were tested as follows:

Group I consisted of 47 randomly selected participants from two centers who were tested over an eight-month period (October 1971 to May 1972). Group II consisted of 82 randomly selected participants from two centers who were tested over a five month period (January 1972 to May 1972). A three-factorial (sex x time x teacher) multivariate analysis of covariance cross-nested design served as the model. The dependent variables included
scores on these measures administered in May 1972: TOBE General Concepts, TOBE Language, TOBE Mathematics and Self-Concept Rating. The independent variables included scores on the indicated test measures obtained in October 1971 for Group I and in January 1972 for Group II. A multiple and step-wise regression analysis were run to evaluate the contribution of the five independent variables to the variance of the four dependent variables. (p28)

The finding of the above comparisons of importance to this current investigation was that differences in gains between children tested over an eight-month period compared to those tested over a five-month period were not significant. In summary of test data the researchers noted that participants made significant gains ($<.01$) regardless of time span between test administrations and regardless of their teacher. It was demonstrated, however, that the teacher factor had a significant influence on children's readiness skills. A summary of multivariate F-values for teacher comparisons indicated differences were highly significant. (p$<.0001$)

Halasa and Fleming concluded that the most critical variable affecting children's performance was the teacher's influence. Failure to have objective systematic data descriptive of the teaching process as utilized within a given classroom was pointed up as a major shortcoming in the report. Halasa and Fleming noted that participants evidenced significantly higher levels of readiness skills ($p<.01$) at the end of the school year as compared to performance at Project entry (see their table A following) regardless of whether the time span
between test-retest administration was 8 months (Group I) 
or 4 months (Group II), based on performance on TOBE.

Excerpt from Table A, p.7

Correlated t-tests for pre-post differences in mean 
standard scores by group (Halasa and Fleming)

<table>
<thead>
<tr>
<th>TOBE Subtest</th>
<th>Group I</th>
<th>Group II</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oct. 71</td>
<td>May 72</td>
</tr>
<tr>
<td>Language</td>
<td>42.27</td>
<td>56.59</td>
</tr>
<tr>
<td>only</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.01

However, it could not be ascertained whether the observed 
gains are solely a function of Project participation or 
maturation, in view of the absence of a control group.

This problem has been avoided in the writers' current study. 
A control is provided by Group III children. Halasa and 
Fleming also noted that children whose parents made "more 
frequent" use of the toy lending libraries (Group X) as 
compared to those whose parents made "less frequent" use 
(Group Y) also exhibited growth in readiness skills. Note 
Table B following from their study:

Excerpt from Table B, p.8

Mean Standard Scores Over a Four-Month Period by Subtest 
(Halasa and Fleming)

<table>
<thead>
<tr>
<th>TOBE Subtest</th>
<th>Group X</th>
<th>Group Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>Language</td>
<td>Jan. 72</td>
<td>Jan. 72</td>
</tr>
<tr>
<td></td>
<td>May 72</td>
<td>May 72</td>
</tr>
<tr>
<td></td>
<td>Gain</td>
<td>Gain</td>
</tr>
<tr>
<td></td>
<td>45.30</td>
<td>47.72</td>
</tr>
<tr>
<td></td>
<td>58.43</td>
<td>58.81</td>
</tr>
<tr>
<td></td>
<td>13.13</td>
<td>11.09</td>
</tr>
</tbody>
</table>
Finally, the Halasa study noted that there should have been some method to describe the classroom processes which may in part have explained the marked variability in classroom performance. An objective systematic assessment of the classroom processes would have identified those component or components which could be specifically related to children's performance. Any information which could be obtained through classroom observations describing transactions between children, between children and adults, would no doubt maximize the likelihood of abstracting those significant dimensions of behavior (such as performance in readiness measures) affected by events occurring within the classroom. The development and inclusion of a systematic classroom observation device in future assessment of this Project is strongly recommended. (p.10)

Again, the foregoing weakness was avoided in the current study through use of the Teacher Structure Checklist and multiple observations to categorize classroom techniques being used in the six centers participating in the study.

One study in Colorado involved a number of bilingual children (Fallon, 1973). The Headstart-Preschool program in Poudre R-1, Fort Collins, Colorado, was funded by two sources (HEW and Title 1, ESEA) which broadened the eligibility requirements. In a study to evaluate the program's effectiveness conducted by Colorado State University the following information was gathered and recommendations offered: Children in the program were grouped into seven classes located in four centers. There were a total of 114 children, 64 funded by OEO and 50 by Title I. Classes were held from 8:30 A.M. to 11:30 A.M. and the children ate a hot lunch at school. Each class was staffed with a teacher,
regular aide and volunteer aide. The aides were bilingual which enabled English speaking teachers to communicate with children from Mexican-American homes. The test used was not named. Sixty-one of the 114 children were present for both a pre- and post-test which yielded an I.Q. score, and three control groups were compared with the Head Start preschool children. Two groups were primarily upper-middle-class children enrolled in excellent preschools. The third group was primarily lower-class children enrolled in a day care center. The only group increasing its percentile score on middle-class norms was the Head Start-Preschool group. The pre-tests showed a developmental lag of lower-class children in numerical concepts when they were compared with middle-class children. Analysis of the pre-and post-test difference in mean scores for these groups showed that the average gain in raw score was larger for the Head Start-Preschool group on middle class norms, indicating that they reached average performance by the end of the program. Both of the lower-class groups consistently scored lower than the middle-class group on all pre-tests, indicating that the lower-class children were deficient in these skills when compared to their middle-class peers.

The data indicated that the Head Start-Preschool children made the largest average raw-score and percentile gains of
any group. Their gain was greater than could be accounted for solely by a six-month increase in age, indicated that the initial gap between the Head Start-Preschool group and the middle-class groups had been reduced. In contrast, the lower-class control group increased its percentile score on only one test. The failure of the lower-class control group to make a gain sufficient to maintain the same percentile score from pre- to post-test suggested that unless appropriate intervention is planned, lower class children will continue to fall further behind during their preschool years.

It was recommended that Poudre District R-I continue to increase the length of the Head Start-Preschool program until it operates on a nine month school year basis. The school administration, HEW, and Title I increased the length of the program from eight weeks to seven months for the school year 1970-72, and to eight and a half months in 1971-72. The research team also recommended that the staff continue to identify priority goals for the program and noted that traditional nursery schools have usually been ineffective in reducing the developmental lag so characteristic of disadvantaged children. They pointed out that there is increasing evidence from all sides that more direct teaching methods can reduce many of these learning deficits. This recommendation
for increased structure is a common one in the studies reviewed. They also recommended that all non-English speaking children be enrolled in preschool programs regardless of eligibility requirements. The improvement in language ability of several non-English speaking children during the 1970-71 project suggested that this was an excellent opportunity for them and that it should be available to other such children.

Findings of the Early Training Project, Klaus and Gray (1968, 1970) are of particular interest because this project was initiated in 1961, well ahead of the 1965 development of government funded prekindergarten programs. This project operated only during the summer months with home visits planned during the regular school year to bridge the gap between summers. Two comparison groups were identified for controls. Participants were 61 impoverished black children born in 1958 in an upper southern city of 25,000. The program was funded for five years by the National Institute of Mental Health and the majority of the children were available for the entire five year period as transiency was minimal in their area. The children were tested eight times during the 1961-68 years of the program. Instruments used were the Stanford-Binet Intelligence Test, Metropolitan Achievement Test, The Peabody Picture Vocabulary Test, and the Illinois Test of Psycho-linguistic Abilities. The following chart shows the layout of general research design:
LAYOUT OF GENERAL RESEARCH DESIGN (Klaus and Gray)

Treatments
- T1 3 Summer Schools
- T2 Two Summer Schools
- T3 Local Controls
- T4 Distal Controls

First Winter Planning only

First Summer
- 1962 pre-test
- summer school
- first pre-test
- post-test

Second Winter 1962-63
- Home Visitor Contacts

Second Summer 1962
- Same as first summer

Third Winter
- Home Visitor Contacts

Third Summer
- pre-test
- summer school
- pre-test
- summer school
- post-test
- post-test

Fourth Winter
- Same as third winter

Fourth, Fifth and Seventh Summers were devoted to Follow-up testing (only)

Klaus and Gray found that the three summers of intervention (approximately 600 hours) constituted less than 2% of the children's waking hours. The home visits used a maximum of 110 hours or about 0.3% of their waking hours. Effects of the program upon the children were noted as follows: Between May and August of 1962, May and August of 1963 and May and August of 1964 the first experimental group had, each summer, a special ten-week program. The second experimental group picked up its first ten-week program in 1963 and a second one during the next summer. All children went to first grade in
They were tested at the end of that year, again in the summer of 1966, and again in the summer of 1968. The two control groups continued to lag behind the experimental groups. The distant control group showed the most decline, while the local control group was only a little behind the two experimental groups in 1968. When siblings of the project children were examined and compared with siblings of the control children the latter children scored higher on the Binet Intelligence Test. While younger siblings of experimental children were superior to the young siblings of control children there was no comparable gain in school performance noted for older siblings of either group.

Urie Bronfenbrenner (1974) addressed his study to five questions in reporting on longitudinal evaluations of preschool programs. It is the first of these that is most relevant for the purposes of this study. Do children in experimental programs continue to gain in intellectual development as long as intervention continues? Bronfenbrenner examined the issue of program length in his review of 4 of the 7 projects which met the detailed criteria for inclusion in his longitudinal study. These were projects by Deutsch, Gray, Herzog and Weikart. Bronfenbrenner concluded that "the hope that longer programs may insure more enduring gains is also disappointed. If one takes as a criterion the difference in gain between experimental and control groups two years after completion, then the 6 point I.Q. difference
produced by one year of intervention in the Hodges study holds its own against the corresponding 7 point discrepancy achieved in two years by Weikart's project and clearly surpasses the 1 point residual remaining after three years (to be sure, mainly during summers) of Gray's program, it is disheartening that the differences are so small when the years are so long" (p. 17)! While Bronfenbrenner attributes this factor to a lack of structured curriculum presenting emphasis on verbal interaction in the four projects, this researcher feels the comparison of the projects in terms of length of program is somewhat invalid due to the great variety in the amount of actual time spent in the program over years. (For example, Gray's project met for three summers only. By contrast, Herzog's subjects continued to receive special treatment for three years after nursery school, including extra teachers and an enriched curriculum.)

Bronfenbrenner (1974) concludes that in several studies reviewed greatest loss in cognitive performance of disadvantaged children took place not while they were in school, but over the summer months. He points out that during the same period, disadvantaged children participating in parent intervention programs not only maintained their status, but showed significant gains (p. 53). Children participating in the parent intervention programs were visited in their homes and tutored
regularly by members of the teaching staffs.

Ryan (1974) conducted a comprehensive review of eight longitudinal evaluations of preschool programs and concluded that early intervention does have an immediate impact (within one year) on the child's performance when measured by the Stanford-Binet, or personal-social adjustment ratings. When program intervention impact was looked at on a long term basis it was evident that positive impact on school performance had been reported, with variables such as age, sex, and socio-economic status affecting the quality of the intervention impact.

A prekindergarten program serving children in the Fargo Public Schools (1973) under Title III of the Elementary and Secondary Education Act was conducted for four year olds classified as having potential learning handicaps. Seventy children, attending half day sessions for four days a week were included in the project. A control group was identified. The project ran for thirty-five weeks and all children were evaluated at the beginning and end of the 1972-73 school year which was the second project year for the program. Six tests were used to select and evaluate participants: (1) Hunton Pre-school test (2) Test of Basic Experiences-TOBE (3) Stanford Binet Intelligence Test (4) Articulation Test (5) Hunton Math Test and (6) Hunton Language Test. The Hunton
measures were locally designed instruments. Statistical tests of mean differences were calculated to compare the project children with the control group. The project participants showed an average increase in I.Q. of 7.94 points, while the control group members gained less than one point. The project gain was significant at the .01 level.

Goodwin (1973), presents a comprehensive summary of five evaluations conducted on Philadelphia Follow Through programs. The data regarding pupil achievement characteristics: Metropolitan Achievement Test (MAT), Spring, 1973, is relevant for this study. It is noteworthy that the total Follow Through program achieved higher mean standard scores than the total Non-Follow Through grouping in all three kindergarten test areas; in four of the five first grade areas (all except Word Analysis); in all four of the Math areas of second grade; and in two of the four Math areas in third grade. When the Spring, 1973 MAT scores were grouped into those children who received the maximum desirable exposure to the model with Head Start experience (Max HS) or without Head Start experience (Max NHS) the finding indicated that the groups with previous Head Start experience (Max HS) attained higher achievement across all models, particularly at the kindergarten and first grade levels.

In his review of preschool programs, Wilkerson (1965), points out the continued success of compensatory education
programs for poor children and their positive impact on children's later academic achievement. He presented the specific results from the Early Admission Project in Maryland --a three year project designed to determine if early school admission could decrease learning deficiencies associated with impoverished environments. Children ages four to five were admitted to two centers and were provided with many enrichment experiences and opportunities for interaction. After five months in the program children in one center exhibited a mean gain of 17 points on the Columbia Mental Maturity Scale while the second sample achieved a mean gain of 20 points. An integral part of this program was parent involvement.

Weikart, Kamii and Radin (1965) also documented the success of preschool programs using the parent-involvement technique in their morning preschool/afternoon parent conference program. Participating children demonstrated gains both in language development and intellectual ability during the early part of the project.

The direct teaching method employed by Bereiter and Engelmann (1966) is well known for the dramatic gains in language development and general intellectual ability exhibited by preschool children enrolled in the program.

The Teacher Factor in Prekindergarten Language Development Programs

Elaborate instructional programs notwithstanding, the
role of the teacher as a catalyst in the development of very young children is still presented as the most important, and least understood element of a successful prekindergarten program.

In her doctoral research Linn (1966) tested 103 Head Start children in 70 programs in Texas, using the Peabody Picture Vocabulary Test (PPVT) and the Caldwell Preschool Inventory during the early weeks and at the end of the 1965 summer session. In reviewing the relationship between teacher behavior and the two sets of test scores she analyzed teacher background and related this variable to classroom behavior. Using a multiple regression design, she found a significantly high relationship ($R = .50$) between the PPVT change scores which predict behavior and concluded that the Head Start teacher's effectiveness in promoting or restricting linguistic progress could be documented.

Getzels and Jackson (1962) present an extensive review of the literature concerning evaluation of preschool programs and they conclude that the teacher is the single most important element in building a successful program for very young children.

The first of two reports of a National Evaluation (1972) reviews the immediate effects of Project Head Start on children and their families when children are enrolled in full-year classes operated in 1968-69. The study identifies
changes associated with Head Start participation and the conditions under which these changes were greatest. No control groups were used; comparisons were made within the Head Start sample to see what kinds of classroom experiences "work best" for what kinds of children.

Evaluation is a part of the Head Start budget. Over the past few years several million dollars have been spent in a wide variety of research and evaluation efforts. Studies are grouped in six categories: census surveys, individual research studies, the five-year longitudinal study by Educational Testing Service, the "planned variations" experiment evaluated by the Stanford Research Institute, special purpose national evaluations, and the 1966-69 E & R Center national evaluations. Census studies were designed primarily to test compliance with federal guidelines. Over a hundred research studies by the end of 1972 had been conducted—often involving only one or two centers and, usually funded by the Office of Economic Opportunity. Frequently using standardized intelligence or achievement tests, these reviews are usually of short duration.

Dominant issues in Head Start research include:

What are the immediate and short-term effects on children of the preschool experience? What are the longer-range effects?

How does the degree of structure of a program effect its impact on the children?
How do differences in teacher characteristics and approaches effect the children?

Do children and parents benefit from active parent involvement in the program?

What are other effects of the program?

When teachers rated their program in the national evaluation study of program characteristics in 1968-69, they indicated that "over half the children - 51.95% - were in classes that placed virtually no emphasis on language-related activities." The survey concluded that "most classes provided little or no specifically organized language instruction; of those that did provide such instruction, the common procedure involved fairly brief sessions approximately every other day over the full school year." (p. 127). However, when other evaluators rated sample programs they listed language development as the most frequently observed activity. This would indicate that the programs were more academically oriented than the teachers perceived them to be.

In noting the characteristics of teachers in this survey we see that about 60% had a bachelor's degree while 13% never attended college. Few had formal training in early childhood education and over half had not experienced preparatory training for teaching Head Start. These teachers tended to see their programs as child centered with development of positive self-image and mental health as their prime objectives. In summing up gains made by the children
in the programs which had statistical significance the
national evaluation noted that small but significant improve-
ment occurred in all cognitive measures and in the children's
motivational and social-affective growth. However, the
analysis was limited by the fact that there were no control
groups.

Research Evaluating the Role of High Structure versus Low
in Relation to Pupil Gains in Language Development-Prekindergarten Years

One of the ten issues investigated by McIntyre (1974)
has to do with wider acceptance of the structured or prepared
environment in prekindergarten programs as a current trend.
The idea promoted is that teachers must plan for and make
available materials that the child needs and the child in
turn must do something to materials in order to make sense
of them. There is a swing back to the higher structure of
the early 60's that was frowned upon in the last half of
that decade, the difference being that stress is now on
social communication with action always preceeding communi-
cation. A prime goal is to help the child internalize his
own experiences or actions on objects.

The National Evaluation (1972) notes that the concept
of structure is often identified as a significant dimension
in comparing the relative effectiveness of different approaches.
Frequently oversimplified, the structure concept has been used
as a rallying cry of preschool educators "...who emphasize
the open, free, playful nature of early childhood learning in contrast to those who emphasize the value of pre-planned, goal-directed, early achievement" (p. 176).

Karnes (1969) suggests that a structured preschool program when compared to a more traditional program, significantly enhanced children's functioning in social development. At the end of the children's kindergarten year, Karnes asked public school teachers to rate all of their children in the area of social development and work habits and attitudes by means of a brief questionnaire. In the area of social development, the teachers rated the children who had attended the Karnes preschool significantly higher than the children who had attended the traditional preschool on two items, one relating to the child's self-concept. In the work habits and attitudes section the teachers rated the Karnes' children significantly higher on all items, reflecting the children's confidence and enjoyment in the learning situation.

Levy (1968) investigated the effects of specified dimensions of teacher behavior on the language development of socially disadvantaged children enrolled in Head Start. He hypothesized that teachers who showed high levels of competence in eliciting verbal behavior from their pupils and rewarding them appropriately, in providing a language model for children to imitate and observe, and in maintaining positive social-emotional relationships in the classroom,
would facilitate greater language development in their pupils than would teachers who showed less competence in these areas. Eighteen Head Start teachers were observed during their entire morning and afternoon class sessions and rated on three 10-item subscales of the Observational-Rating Instrument which was designed for the study. Each of the subscales: Response-reinforcement, Modelling, and Social-Emotional -- was constructed to measure a specific parameter of teacher behavior which was hypothetically related to language growth in preschool children. The 18 teachers were arranged in rank order according to their rating scores; then the rankings were divided into three groups, designated as High, Middle and Low teacher-behavior groups. Language development, the dependent variable, was quantified by five selected subtests of the Illinois Test of Psycholinguistic Abilities and an additive Composite Score. Tests were administered to 295 children who were enrolled in the 18 Head Start classes. There was a six month time span between initial and final test administrations, with the scores on the final round of testing serving as the index of language growth.

Levy found significant differences among the three teacher-behavior groups in all language indices save the Auditory-Vocal Automatic subtest. The hypothesized relationship held up when the total sample was divided into Black and White
subsamples of children. The highest-rated teacher behavior
groups also had the highest language scores on the initial
administration of tests. Levy concluded that the effects
of more competent teachers were manifest even before the
initial round of testing for children who had been in Head
Start previously for a long period of time.

The Levy study was conducted in Cleveland, Ohio using
Head Start children enrolled in two programs operated by
the Catholic Diocese of Cleveland (Project PACE) and the
Council of Churches of Christ in Greater Cleveland. All
but one of the study teachers were Black and although a
few held college degrees, none had completed formal educa-
tion requirements for nursery school teaching. Levy noted
that the Head Start teacher, although a new figure in the
preschool system, had rarely been a subject of a controlled,
systematic research. He developed three hypotheses:

1) Teachers with a high rating in direct language
   training facilitate greater language development of
   their pupils than teachers with a low rating in this
   variable.

2) Teachers with a high rating as language models
   facilitate greater language development of their
   pupils than teachers with a low rating in this variable.

3) Teachers with a high rating in the production
   of an optimal social-emotional atmosphere in the class-
room facilitate greater language development of their pupils than teachers with a low rating in this variable. (p. 146)

After correcting his data for unreliability, all intercorrelations attained unity and Levy was unable to test the three separate-dimension hypotheses with available data. A fourth general hypotheses which combined the first three was tested. He found the general hypothesis was confirmed. Significant mean differences in favor of the higher-rated over the lower-rated groups were obtained on all but one of the indices of language development—the Auditory-Vocal Automatic subtest of ITPA. Levy concluded that teachers who show a high degree of rated competence in the dimensions of direct language training, modelling, and social-emotional relationships facilitate greater language development of Head Start children than do teachers who receive lower ratings on these factors.

It can be demonstrated that teacher behavior greatly influences the degree to which very young children will relax and participate in activities designed to develop their language and cognitive skills.

Two studies have been carried out in which relationships between teacher variables and activity levels of children were investigated. Prather (1969) found that a student's activity level as well as involvement in class-
room activities were positively correlated with a teacher's abstract belief system and a teacher's resourcefulness, and negatively correlated with the teacher's dictatorialness and punitiveness. Schoukert and Kouchton (1968) focused their study on relationships between techniques of teaching and low levels of activity or fatigue in children attending day care centers. In one situation the teacher was instructed to help the child in his relations with other children and in his use of play materials to the extent demanded by the child's social and emotional needs. In the other situation the teacher was instructed to confine her interaction with children to brief responses in reply to their requests for guidance. The authors found that the youngest girls showed significantly more fatigue under conditions of non-guided teacher participation. Under the same conditions the other children showed a nonsignificant but strong trend in the same direction. Both of these investigations indicated that teaching characteristics such as encouragement, helpfulness and sensitivity to needs of individual children were associated with increased activity levels of children.

Finally, Bronfenbrenner (1974) notes that two projects included in his evaluation of the effect of program length employed traditional nursery school approaches with emphasis on free play, while three were classified as structured cognitive programs, and the latter programs were most effec-
tive at the beginning. Children in the structured programs eventually exhibited decline which led Bronfenbrenner to state that "...even the best curriculum cannot immunize a disadvantaged child against developmental decline once he is cast back into his old environment." Perhaps the message here is that although teachers must be skilled in planning and providing stimulating learning environments, they must not become slaves to structuring that leads to end planning of the activities of young children. To quote Jean Piaget, "Children should be able to do their own experimenting and their own research. Teachers, of course, can guide them by providing appropriate materials, but the essential thing is that in order for a child to understand something, he must construct it himself, he must re-invent it. Every time we teach a child something, we keep him from inventing it himself." (Piers, 1972, p. 27)

Reports concerning Gains made by Bilingual Head Start Children in Summer Portions of Year-round Programs

Helping bilingual children learn is much more complicated than helping those who enter Head Start speaking and understanding English. Two major approaches to meeting the special educational needs of bilingual children have been developed. They are (1) teaching English as a second language (TESL) and (2) Bilingual education. The two are not mutually exclusive; the approach depends on a great extent
on the educational philosophy and the objectives of those administering the program. TESL uses methods and techniques that have been developed to teach foreign languages and attempts to teach the child to use mainstream English dialect with the same ease as the average English-speaking child his age. Bilingual education is characterized by the use of two languages to teach some or all of the school curriculum, and is the method used in school F of this study. One advantage of this approach is that it uses the child's "native" language to teach new concepts and other subject matter while he is learning English. This permits the child to use the symbolic system he already possesses as a tool for learning. The English speaking teacher in school F developed her knowledge of Spanish, and was assisted by two Spanish-speaking paraprofessionals and a great number of regular bilingual volunteers.

The need for adequate early education programs for bilingual children continues to grow in Chicago. A survey by the Chicago Board of Education conducted in 1971 indicated that 33,509 Spanish-speaking students in regular elementary schools, or 65% of the total bilingual student enrollment, exhibit English language deficiencies. This group achieved reading scores one or more years below grade level. It is anticipated that the 10.4% Spanish surnamed students of the total Chicago public school popu-
lation, numbering 59,319 in 1971, will swell to 14.1% or approximately 67,000 children by 1980. (Chicago Board of Education, 1972) It should be noted that a number of researchers take issue with the assumption that bilingualism leads to or is accompanied by intellectual deficit. Lambert (1963) relates a study he conducted wherein his results show that the bilingual students are far superior to monolinguals on both verbal and nonverbal tests of intelligence. Granting the concommitants of bilingualism may be unclear, the need for early language training is clearly evident in view of what we now know about cognitive growth in the early years.

Although a number of bilingual educational programs have been designed for children under age five across the country, few have been subjected to empirical evaluation with objective testing. Fear of labeling the children, lack of appropriate instruments, and short span of program offerings are stated most often in explanation of this vacuum. While evaluations are in short supply, there exist a number of descriptions of the many bilingual programs now offered by various institutions. The Chicago Board of Education provides seventeen prekindergarten models. Essentially, two types of bilingual education programs are provided; transitional and maintenance. The goal of the transitional program is to enable students who are dominant in a language
other than English to move into the linguistic and cultural mainstream as soon as possible, while the purpose of the maintenance program is to enable students to learn in both languages and to become bilingual-bicultural citizens. (Spotlight, 1976)

John and Horner (Williams, 1970) point out that the narrow perception of bilingual education as a vehicle for minority children to acquire the national language and culture has been replaced by the concept that "...bilingualism can only be successful as a mutually developed and mutually experienced process of learning and teaching, involving both majority and minority communities." (p.150). This latter goal has been adopted by the Chicago Board of Education in designing its bilingual programs.

Studies and Reports Specifically Concerned with the Effects of Race and Social Class on Language Development of Young Children

A number of studies have looked at the effects of race and social class on language development of prekindergarten children. Johnson (1973) and Gottfried (1974) point out that beyond minimal gains in test scores when familiar dialects are used to assess language development there are no differences in children's performance that can be attributed to race and social class. Both researchers developed tape-recording techniques for evaluation of pre-kindergarten children's language development.
Gottfried examined 72 black preschool lower-class children in New York City day care centers to investigate the relationships between the dialect employed by the model and children's language production. She used four modelling conditions which featured varied length of presentations in Black and standard English. The pre and post-test scores were tape-recorded. The major finding was that modelling in a shorter sequence, using Black English, caused greater verbal productivity. However, she concluded by noting the limitations of inferring children's language competence from their performance without maximum consideration of the social situation in which the children were involved during their language production assessment. The quality and method of the stimulus was of first importance in both studies. Gottfried implied that modelling in conjunction with specific linguistic and length variables should be an effective method for modifying children's verbal behavior.

Johnson (1973) investigated children's natural speech, recorded in unstructured settings, and compared the recordings with speech demonstrated on standardized tests. Forty preschool children from two races and social classes were examined with subscales of the Wechsler Preschool and Primary Scale of Intelligence and also the Illinois test of Psycho-linguistic Ability. Natural speech was recorded by having the children wear vests concealing microphones and taping
their conversations. The conversations were then rated using Hunt's T-units, a vocabulary range measure, together with a count of concepts used in the children's speech. Concepts were rated with the Boehm Test of Basic Concepts. Johnson expected to find differences between social class and racial groups on the standardized tests but not in the spontaneous speech measures. Both hypotheses were supported to a small but significant degree. The researcher noted that difficulty was experienced in attempting to match groups for performance IQ. It was difficult to locate lower class children with IQ's above 100 and middle class children below 100. After much searching his sample consisted of children with IQ's in the middle range. He concluded that "...when performance IQ is controlled, social class, race, and sex differences in language do not exist except for measures of dialect " (p.11). The same conclusion was drawn by Brown (1965) in his investigation of language development in children from the lower socio-economic strata.

Deutsch (1963) reviews research which suggests that early intervention in language areas can facilitate the transition from home to school when it has been preceded by an emphasis on perceptual training. The school must present a systematic program that will insure both intellectual and attitudinal receptivity of each child to its requirements. In developing his "cumulative deficit
hypotheses" Deutsch (1964) stresses the need for remedial and enrichment programs which follow developmental stages and the introduction of curriculum change at the earliest possible time to arrest cumulative deficit.

In his review of Head Start summer programs conducted in New Jersey, Raph (1965) developed approaches for obtaining interpersonal, interactive speech exchanges used by the children which could be analyzed to yield qualitative and quantitative dimensions. Two approaches to development of a standard-stimulus situation were explored; one using simple, structured devices and the other a semi-controlled free-play situation. He concluded that a standard-stimulus device should offer some type "of quiet, manipulative activity; an open-end type of play -- as with miniature dolls and furniture, clay, or tinker toys, and some element of problem solving -- puzzles, matching cards, mail-box inserts " (p. 16). This data was gathered, but not analyzed.

The need to deal realistically with variations in Black English is voiced by Labov (1967). Labov rejects the resistance to the concept of the existence of a distinct "Negro dialect" that came forth in the early 1960's and reiterates the fact that nonstandard forms are not positively valued by Blacks who hold the same norms of correct speech as do white Americans. He underscores the need for teachers who understand the child's grammar and thereby the source of his errors.
Research Reviewing Evaluation of the Chicago Public School Head Start Program

The investigator found numerous descriptions of Head Start Programs operated by the Chicago Public Schools, but only one evaluative report, the doctoral dissertation by McGlinn (1968). McGlinn developed questionnaires for use with primary I (first grade) teachers in the Chicago Public Schools who were instructing children with prior Head Start experience. Comparisons of the teacher opinions were made from the standpoint of the geographical location of the centers as divided for educational administration. Test results achieved by the children on first grade Metropolitan Achievement tests were compared.

McGlinn asked teachers of former Head Start pupils to rate the children on ten skills as excellent, average or poor. One hundred five teachers responded and rated the children as follows: (from table 5 page 61)

<table>
<thead>
<tr>
<th>Skills</th>
<th>Excellent</th>
<th>Average</th>
<th>Poor</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Muscular coordination</td>
<td>21 (20.0%)</td>
<td>75 (71.4%)</td>
<td>9 (8.6%)</td>
<td>105</td>
</tr>
<tr>
<td>Ability to Work Independently</td>
<td>19 (18.1%)</td>
<td>59 (56.2%)</td>
<td>27 (25.7%)</td>
<td>105</td>
</tr>
<tr>
<td>Ability to Work in a Group</td>
<td>27 (25.8%)</td>
<td>62 (59.0%)</td>
<td>16 (15.2%)</td>
<td>105</td>
</tr>
<tr>
<td>Listening to Others</td>
<td>21 (20.0%)</td>
<td>55 (52.4%)</td>
<td>29 (27.6%)</td>
<td>105</td>
</tr>
<tr>
<td>Self-expression</td>
<td>28 (26.7%)</td>
<td>53 (50.5%)</td>
<td>24 (22.8%)</td>
<td>105</td>
</tr>
<tr>
<td>Visual Discrimination</td>
<td>20 (18.1%)</td>
<td>74 (70.5%)</td>
<td>11 (10.4%)</td>
<td>105</td>
</tr>
<tr>
<td>Skills</td>
<td>Excellent</td>
<td>Average</td>
<td>Poor</td>
<td>Total</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>-----------</td>
<td>---------</td>
<td>---------</td>
<td>-------</td>
</tr>
<tr>
<td>Auditory Discrimination</td>
<td>15(14.3%)</td>
<td>70(66.7%)</td>
<td>20(19.0%)</td>
<td>105</td>
</tr>
<tr>
<td>Reasoning</td>
<td>9(8.6%)</td>
<td>63(60.0%)</td>
<td>33(31.4%)</td>
<td>105</td>
</tr>
<tr>
<td>Ability to complete Assignments</td>
<td>20(19.0%)</td>
<td>61(58.1%)</td>
<td>24(22.9%)</td>
<td>105</td>
</tr>
<tr>
<td>Readiness for First Grade Work</td>
<td>22(20.9%)</td>
<td>51(48.6%)</td>
<td>32(30.5%)</td>
<td>105</td>
</tr>
</tbody>
</table>

The teachers were also asked to rate former Head Start pupils on the following attitudes and habits: Respect for school personnel, adjustment to classroom routine, interest in use of varied classroom materials, personal cleanliness, orderliness in taking care of materials, sense of personal worth, pride in accomplishments of learning, enjoyment of books and willingness to try new experiences. In these areas the former Head Start children were rated highest in enjoyment of books (excellent by 54.4% of the teachers) and lowest in adjustment to classroom routine (poor by 14.4% of the teachers.) The 24 teachers in McGlinn's samples who had had former Head Start teaching experience tended to rate their ex-pupils higher in 9 out of 10 skills and attitudes assessed than did those teachers who had not taught Head Start. However, this group comprised only 25% of the total sample.

Reports Concerning Availability of Funding for Preschool Programs

The quest for adequate funding for Head Start and other prekindergarten models for disadvantaged children
continues. In viewing DHEW Publication No. (OHD) 75-30, Research, Demonstration, and Evaluation Studies, Fiscal Year, 1974, one notes that government funds are being made available to investigate every facet of early childhood education.

The strengthening of the Project Head Start Program is primarily supported through the evaluation component. The findings from these assessments as well as those of related research and demonstration activities in the field of early childhood are continually being utilized in the planning processes, policy-making, and on-going development of the Head Start Program. The evaluation effort serves as part of the developmental process when building new programs or services (formative); as an assessment of general or differential impacts of programs and services (summative); an assessment of the efficiency as well as effectiveness of programs and services. (p. 6)

The main goal of this research funding is stated as "strengthening Project Head Start as a national demonstration of cost-effective, community based methods for providing developmental care to low-income children."

Funding for bilingual education programs has been most abundant from both state and federal sources in recent years. Public Act 78-727 was signed into law in September, 1973, mandating that beginning in July, 1976, bilingual education be provided in all attendance centers enrolling 20 or more students who are of the same language background and who have limited English-speaking skills. Federal funds provided by ESEA Title VII have been bolstered by State Bilingual Education Act and Board of Education, City of
Chicago funds to provide bilingual-bicultural programs throughout the city. (Spotlight, 1976) Title IV-A funds, authorized through the Social Security Act, have been a major source of federal support for day care under limited circumstances.

There has been growing concern that increased government funding would be accompanied by unwanted federal controls. In addition, social scientists have been seen as threats to the freedom enjoyed by program planners in earlier years. Hess (1968) states that:

"As early education becomes the object of concern on the part of funding agencies and a growing number of social scientists, especially child psychologists, it seems likely that the character of the field may change substantially. In its present structure, pre-school education seems peculiarly vulnerable to influence, primarily because it lacks bureaucratic organization and has few ties to large, powerful, invested professional interests. Vulnerability to influence is not necessarily an advantage; pre-school education may be more easily affected for good or ill than other areas of education. Indeed there are signs that the open-ended quality of this field is decreasing rapidly through the impact of Project Head Start, which has funded large-scale pre-school summer and year-round programs through the public schools." (p. 97)

Chicago spent $130,000,000 in the first 5 years of Title I projects. In reviewing the advantages and shortcomings of Title I programs in the Chicago Public Schools Dunbar (1970) states that the Child Parent Centers are "...the most demonstrably successful of the 31 activities in Chicago's Title I package. Of course Head Start pre-dated the Child
Dunbar deplores the abrupt ending of some federally funded programs and cites Head Start as an example of preempting losses when Head Start children are returned to the traditional program of an inner-city school. She recommends the cut-back of a number of programs and schools served, more grass-roots planning, and early program implementation at the beginning of each school year.

The following chart from the National Evaluation (1972) is of interest for this study in terms of funds provided. Funds are stated in millions of dollars in the third column.

Table I from ED 072 860 Effects of Different Head Start Program. (p. 5)

HEAD START FUNDS, PROGRAMS AND CHILDREN, 1965 THROUGH 1973 (Dollars in Millions)

<table>
<thead>
<tr>
<th>Year</th>
<th>FY</th>
<th>Funds</th>
<th>Grants</th>
<th>Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summer 1965</td>
<td>66</td>
<td>$85.0</td>
<td>$2,397</td>
<td>561,000</td>
</tr>
<tr>
<td>Full Year 1965-66</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Summer 1966</td>
<td>67</td>
<td>98.0</td>
<td>1,645</td>
<td>573,000</td>
</tr>
<tr>
<td>Full Year 1966-67</td>
<td>81.9</td>
<td>470</td>
<td>160,000</td>
<td></td>
</tr>
</tbody>
</table>
As noted earlier, the current national cost for Head Start has escalated to $450 million dollars for the 1976 program year.

**Summary**

The purpose of this chapter was to supply background information concerning the major parameters of the proposed study. Studies were reviewed which investigated gains in language development achieved by prekindergarten children in light of program length, classroom structure, linguality of the children, and sex. A section reviewing research limited to the effects of race and social class on language development was included because most of the subjects were Black or Mexican/American, and all were members of poverty families.
References to program costs and sources of funding for preschool programs was made because funding has been a major factor in determining the length of prekindergarten programs currently offered. Throughout the review of the literature the writer has sought to identify those findings and questions which are relevant for the current investigation, and to note factors which weakened previous research.

A time of reckoning has come for early childhood education programs in America. Beyond concerns regarding the length of programs offered are larger questions that must be answered. "The current conflict between the widespread demand by parents for early childhood education and scholarly rejection of preschool center-based intervention as an economically worthwhile social action program for all ...may be resolved if present programs, both operational and experimental, are regarded as guides to increasingly feasible and effective action on behalf of children."

(Datta, 1970, p. 2)
CHAPTER III
DESIGN AND PROCEDURES

I. Design

This study is designed to determine if children participating in a twelve-month Head Start program exhibit measurable gains in language development that are significantly better than gains exhibited by children who spend only ten months in the program. Comparisons of scores obtained on the TOBE language development test by six Head Start groups at the end of ten and twelve program months comprise the fundamental aspects of the study.

Sub-problems under consideration are concerned with three areas: (1) the effect of high versus low classroom structure on rate and maintenance of gain in language development as evidenced by comparison of achievement test scores obtained by children in the two structures over time, (2) the rate and degree of gain in language development and maintenance of same exhibited by bilingual children in comparison with monolingual children over the same summer Head Start program time, and (3) an examination of the effects of sex differences on the rate and level of gain in language development as measured for boys and girls in six Head Start programs.

II. Subjects

The subjects for study were the intact Head Start classes of six centers, selected randomly from eighteen ongoing centers known to the investigator. There are 81 Head Start centers operated by the Chicago Board of Education in public schools.
At the time of the survey the investigator served eighteen of these centers as program supervisor for the south section, known as Area A. Participating centers were selected through a lottery presenting equal chance of selection for all of the eighteen centers. One of the centers selected was populated with bilingual children.

Prior to testing effects of independent on dependent variables, other variables related to language development which might have altered TOBE scores in some systematic way were examined. Chronological age, length of time enrolled in Head Start prior to initial testing in June, number of male versus female children, and class size were the factors reviewed. Subjects were limited to children who had been enrolled since September, 1974. All children were of the same age cycle since the Chicago Board of Education guideline for admission regarding age had been strictly applied in all centers. Children enrolled in September, 1974 had to reach age four by December 1, 1974 as a condition for entry. Sex comparisons were to comprise a facet of the study. There was a natural balance of sexes in the eligible subjects, 57 boys and 55 girls. Class size was also controlled by program guidelines, with twenty-two children being the maximum enrollment permitted.

Subjects participating from the bilingual population were Spanish surnamed and were of Mexican-American or Puerto Rican extraction, with the first comprising the majority. All subjects in the remaining five centers were Black.
III. Instruments

(A) TOBE Language Development Test

Language development of the Head Start child was defined operationally in terms of scores on the TOBE (Test of Basic Experiences) Language Development Test, kindergarten form (Form k). The language subtest of the California Test Bureau McGraw Hill's TOBE series, developed by Moss (1970), is one of five standardized group tests, and can be used as an independent instrument. It assesses basic language concepts including vocabulary, sentence structure, verb tense, sound-symbol relationships, letter recognition, listening skills, and perception of the use of symbols. This test also includes items based upon a new approach in the measurement of language skills which uses synthetic or "nonsense" words. The child must derive their meanings from the context of the sentence in which they are used.

Level k presents norms for prekindergarten and for kindergarten children. For this study the prekindergarten norms were used. The test requires twenty-five minutes for administration. Scores may be reported in percentile ranks, stanines, and standard scores.

The TOBE test should be administered by persons with professional training in education or its equivalent. For this study the test was administered by certified teachers in all centers, with bilingual paraprofessional staff assisting with the administration of the test to children in center F, which was populated with Spanish speaking children. Spanish speaking children are given the directions in both English and Spanish.
This is the approved method for administering the test to bilingual children.

Complete information concerning derivation and interpretation of each method of scoring is explained in the testmaker's manual, together with a discussion of reliability, validity and standardization.

The rationale for using the TOBE for this study includes the following factors: (a) the reference group for TOBE standardization meets qualifications for use with Head Start children, (b) TOBE evaluates the effects of instruction by measuring changes in scores over time both with and without a relevant instructional program, (c) there is minimal "practice test effect" of less than two points, rendering the test ideal for pre- and post-testing, and (d) there is no evidence of sex or racial bias in TOBE scores. The TOBE was administered to children in the LINC demonstration centers in North Carolina to validate the appropriateness of the instrument for measuring the effect of a planned instructional program and to verify the absence of race and sex bias. Scores of black and white children were compared after the children had been grouped by a Home Information Scale which rated the amount of educational stimulation found in the home. Moss (1970) states that:

On the average, the black children scored lower initially than the white children and exhibited larger gains, thereby reducing, and in a few instances eliminating, the initial difference. Although only a brief time was involved, these results are impressive evidence of the quality of the educational program offered in the North Carolina Demonstration Centers. They also constitute evidence that there is little, if any, racial bias in the TOBE. If there were any
racial or ethnic bias in the TOBE, the differences would increase following relevant instruction, not decrease. Finally, it may be noted that no sex differences of any sort were found in the TOBE scores of these children. (p.64)

(B) Teacher Structure Checklist

The Teacher Structure Checklist, developed and field-tested by Dr. Patricia Webster, together with observations by the investigator, was used to classify the six teachers participating in this study as high or low structured in their methodology. Webster (1974) defined teacher structure as "the teacher's manner of organization in an educational setting for young children" and developed a twenty-five item checklist to assess observable prekindergarten teacher practices. Description of the scale and scoring procedures can be found in Appendix A.

IV. Procedures

Clearance to conduct the study in six centers was sought and gained by the investigator from the Area Associate Superintendent. The TOBE Language Development test was administered to all of the children enrolled in six randomly selected Head Start centers in June, 1975, at the end of ten program months of instruction. Scores of children enrolled for less than ten months were excluded from the study. One hundred sixteen of the children tested were eligible for inclusion in the study. In late September, 1975, kindergarten children who had completed ten months of Head Start in the same six centers were again tested with the TOBE Language Development Test. One hundred twelve of the original 116 children were available for testing. Of these, 58 had continued instruction through the
summer months and 54 had not attended the summer program.

The six centers were named A, B, C, D, E and F. Center F was populated with bilingual children. Each center was evaluated for degree of structure with the aforementioned instrument. The six participating teachers completed a teacher structure checklist as a self-evaluation procedure. The investigator completed three checklists for each of the six teachers during 50-minute observations on three different days. The four checklists per teacher were then compiled and scored. Centers B, C and D were found to be high structure in climate, while centers A, E and F were low structured.

V. Assumptions

The following assumptions formed the basis for the four major hypotheses listed in Chapter I:

1. Children continuing through the summer months would exhibit gains in language development to a statistically significant degree when compared with those not attending.

2. Children who did not continue through the summer months would lose some of the language skills they had gained during the previous ten months of instruction and would exhibit lower scores when tested in September.

3. Bilingual children would exhibit greater gains in language development as a result of summer instruction when compared with monolingual children. This greater rate of achievement would occur because the
children had gained a broad base of needed skills for rapid language development that could occur during the summer enrichment period of instruction.

4. Bilingual children not attending the summer months would show a greater loss in language development skills than monolingual children when tested in September because there would be fewer out-of-school reinforcement experiences available to bilingual children which presumably help them to maintain skills gained previously.

5. Children instructed in a highly structured environment would make the greatest gains in language development over a ten month period of instruction.

6. Children instructed in low structure environments would maintain levels of language development achieved better than children from high structure setting when both groups were tested and compared at the end of twelve months. This comparison would be between low and high classroom structure children not attending during the summer.

7. Girls would exhibit higher gain scores than boys in all groupings because they exhibit greater verbal skill development in the early years.

VI. Statistical Treatment

In the original design the investigator intended to compute mean scores for pre- and post-tests for six groups and to apply "t" tests to analyze differences in mean scores. Because the
"t" test involved mean scores rather than change scores and also required the use of the same data in making different comparisons it became obvious that interactions and interdependence were not being considered. The purpose of this study was to look at change scores rather than mean scores. Therefore the investigator subjected the data to an analysis of variance. In order to substantiate the minimal effects of interactions, a preliminary investigation was conducted to determine the extent and effect of possible interactions between the variables under consideration. Results of this survey are reported in Appendix B. Interactions were found to be both minimal and controllable for purposes of this study.

The analysis of covariance can be used as a general technique for increasing the precision of an analytical design. This is accomplished by adjusting criterion measures in terms of one or more outside variables, known as covariables. A comparison of the pre-test mean scores obtained by attenders and non-attenders indicated a difference of only 1.3 standardized test score points between the two groups. The 10-month pre-test mean score was 46.7 for attenders and 48.0 for non-attenders.

The 10-month score was identified as the covariable and estimated values were computed. All estimations were based upon comparisons of predicted change when the 10-month score is 50.

Each child's standardized June score was subtracted from his standardized September score to form a gain or change
score. The change score is the measure of language development. A one-way analysis of covariance with one concomitant variable was used to test the null hypotheses about the change score. Comparisons were run on the mean scores of the twelve groups, adjusting the alpha level by the use of Scheffe's procedure. (Scheffe, 1959.) The variables are defined as follows:

\[
\begin{align*}
A &= \begin{cases} 
1 & \text{High structure classrooms} \\
0 & \text{Low structure classrooms} 
\end{cases} \\
B &= \begin{cases} 
1 & \text{Bilingual children} \\
0 & \text{Monolingual children} 
\end{cases} \\
C &= \begin{cases} 
1 & \text{Males} \\
0 & \text{Females} 
\end{cases} \\
D &= \begin{cases} 
1 & \text{12 Months attendance} \\
0 & \text{10 Months attendance} 
\end{cases} \\
\Delta &= Y - X \text{ Change score}
\end{align*}
\]

The following model was used:

\[
\Delta ABCD = \mu ABCD + \chi (ABCD - 50) = \varepsilon ABCD
\]

\[\varepsilon ABCD \text{ are independently N}(0, \sigma^2) \]

\[\mu ABCD \text{ and } \chi \text{ are constants.}\]

The 10-month score is included on the right-hand side of the equation because those with higher 10-month scores will not be able to gain as much as those with lower 10-month scores.

Figure 1, Appendix A, shows the upper and lower bounds of the change score as a function of the 10-month score. Fifty is subtracted from the 10-month score so that the \(\mu\)'s represent the mean changes for \(X = 50\).
All hypotheses were tested with F tests. The sum of squared residuals from the unconstrained models (for the change score or for the 10-month score) were compared with the sum of squared residuals from the models constrained according to the null hypothesis being tested.

The model was estimated using ordinary least squares. All estimation was performed on the IBM/360 Computer at Loyola University of Chicago using the Econometric Software Package (ESP). The estimated regression lines are graphed in Figure 2, Appendix A. The results are presented in Table I.

An analysis of variance (Scheffe, chapters 1-4) was used to test the hypotheses about the 10-month score. The variables are defined below:

\[
A = \begin{cases} 
1 & \text{High structure classrooms} \\
0 & \text{Low structure classrooms}
\end{cases}
\]

\[
B = \begin{cases} 
1 & \text{Bilingual children} \\
0 & \text{Monolingual children}
\end{cases}
\]

\[
C = \begin{cases} 
1 & \text{Males} \\
0 & \text{Females}
\end{cases}
\]

\[
X = \text{10-month score}
\]

The following model was used:

\[
X_{ABC} = \beta_{ABC} + \delta_{ABC}
\]

\[
\delta_{ABC} \text{ are independently } N (0, \sigma^2)
\]

\[
\beta_{ABC} \text{ are constants.}
\]

The model was estimated using ordinary least squares.
TABLE I
PREDICTED CHANGE WHEN 10-MONTH SCORE IS 50

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>ESTIMATED VALUE</th>
<th>STANDARD ERROR</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>M 0000</td>
<td>1.49</td>
<td>2.50</td>
<td>8</td>
</tr>
<tr>
<td>M 0001</td>
<td>8.42</td>
<td>2.73</td>
<td>7</td>
</tr>
<tr>
<td>M 0010</td>
<td>-1.46</td>
<td>2.38</td>
<td>9</td>
</tr>
<tr>
<td>M 0011</td>
<td>3.35</td>
<td>2.21</td>
<td>11</td>
</tr>
<tr>
<td>M 0100</td>
<td>-12.2</td>
<td>3.24</td>
<td>5</td>
</tr>
<tr>
<td>M 0101</td>
<td>-1.33</td>
<td>2.85</td>
<td>7</td>
</tr>
<tr>
<td>M 0110</td>
<td>-7.21</td>
<td>3.56</td>
<td>4</td>
</tr>
<tr>
<td>M 0111</td>
<td>-3.44</td>
<td>3.22</td>
<td>5</td>
</tr>
<tr>
<td>M 1000</td>
<td>-2.15</td>
<td>1.90</td>
<td>14</td>
</tr>
<tr>
<td>M 1001</td>
<td>5.47</td>
<td>1.93</td>
<td>14</td>
</tr>
<tr>
<td>M 1010</td>
<td>-3.10</td>
<td>1.91</td>
<td>14</td>
</tr>
<tr>
<td>M 1011</td>
<td>8.93</td>
<td>1.90</td>
<td>14</td>
</tr>
<tr>
<td>a</td>
<td>-0.54</td>
<td>.076</td>
<td>--</td>
</tr>
</tbody>
</table>

d.f. = (12, 99)  \[ R^2 = .565 \]  \[ N = 112 \]

Key:
- A = classroom structure
  - 1 high structure
  - 0 low classroom structure
- B = linguality
  - 1 bilingual
  - 0 monolingual
- C = sex
  - 1 males
  - 0 females
- D = attendance
  - 1 12 months attendance
  - 0 10 months attendance
CHAPTER IV

FINDINGS AND INTERPRETATION OF DATA

A. 12 Month Change (Gain) Scores

This section reports summarizations of the statistical analysis and discusses findings for the following null hypotheses which were examined concerning the change scores:

$H_1$ - There will be no significant difference in the TOBE change scores for children attending 10 or 12 months. (Summer attendance has no effect on change.)

$H_2$ - There will be no significant difference in the change scores of children instructed in high structure classrooms as opposed to those instructed in low structure classrooms. (Classroom structure has no effect on change.)

$H_3$ - There will be no significant difference in the TOBE change scores observed between the bilingual and all other groups of children when their scores are compared after 12 months. (Linguality has no effect on change.)

$H_4$ - There will be no significant difference in change scores from June to September when scores for boys and girls are compared. (Sex has no effect on change.)

The model was estimated subject to the restrictions implied by the null hypotheses. The F statistics for these
hypotheses are presented in Table 2. All tests are at the .05 level of significance.

The specific prediction for hypothesis $H^1$ was that children who attended twelve months would demonstrate no significant difference on TOBE gain scores when compared with children who had attended Head Start programs for only ten months. This hypothesis was strongly rejected: $F (6,99) = 6.76, p < .01$. An $F$ statistic of 3.00 or higher is significant at .01 with 6,99 degrees of freedom; while an $F$ of 2.20 or higher is significant at .05, the level of significance sought for purposes of this study. Continuing attendance in Head Start classes for the 12 month period influences the change scores. In order to determine for which categories summer attendance was associated with statistically significant differences in change scores six sub-hypotheses of $H^1$ were developed. Detailed discussion of test results and subsequent interpretation for the sub-hypotheses will follow this section, which presents the major hypotheses.

Hypothesis 2, stating that class structure has no effect on the change score, cannot be rejected. $F(4,99) = 1.57$, and is not significant. An $F$ statistic of 2.50 or higher is significant at .05 with 4,99 degrees of freedom. When change scores for the entire population are evaluated to discern the effect of classroom structure on the change score significant differences are not apparent. Therefore, the data disclosed that classroom structure did not appreciably
### TABLE 2

**F STATISTICS FOR 4 MAJOR HYPOTHESES TESTED - PREDICTED CHANGE WHEN 10 MONTH SCORE IS 50**

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>d.f.</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H^1$ effects of Attendance</td>
<td>6,99</td>
<td>6.76*</td>
</tr>
<tr>
<td>$H^2$ effects of Classroom Structure</td>
<td>4,99</td>
<td>1.57</td>
</tr>
<tr>
<td>$H^3$ effects of Linguality</td>
<td>4,99</td>
<td>5.59*</td>
</tr>
<tr>
<td>$H^4$ effects of Sex</td>
<td>6,99</td>
<td>1.01</td>
</tr>
</tbody>
</table>

* F of 3.0 or higher significant $p < .01$ with 6,99 d.f.
F of 3.5 or higher significant $p < .01$ with 4,99 d.f.

(2.50 and higher significant at .05 with 4,99 d.f. and 2.20 or higher significant at .05 with 6,99 d.f.)
effect the gain scores of the population that was examined. However, certain trends became evident when sub-groupings of children were compared in the two structures. Score differences indicated that gains in language development for monolingual girls were enhanced by low classroom structure, while monolingual boys gained best in high structure. Very likely this trend can be attributed to subtle cultural differences wherein sex-role typing occurs quite often in our prekindergarten classes. Boys are frequently encouraged to engage in language limited "masculine" activities around the blockbuilding and physical activity centers involving more doing and less talking. On the other hand, girls are guided to the housekeeping and creative craft centers which favor more verbal interaction. Teachers wishing to discourage such constraints are sometimes hindered by paraprofessional staff and community volunteers who are inclined to support and reinforce the conventional sex role activities with which they are most comfortable. Such constraints are twice as likely to occur in highly structured classroom settings.

Hypothesis 3 states that linguality has no effect on change scores. This hypothesis is strongly rejected: $F(4, 99) = 5.59, \ p < .01$. The $F$ statistic is significant at .01 when it reaches 3.40, and at .05 when it reaches 2.50. These results demonstrate that subjects who were bilingual differed on TOBE gain scores significantly from subjects who spoke only English. It can be hypothesized that lingual differences
are a salient factor in language development, the difference being in favor of the language development of monolingual children. Again, it was necessary to investigate sub-hypotheses of $H^3$ in order to identify the specific conditions which influenced language development within the context of the two lingualities of the subjects. Four sub-hypotheses of $H^3$ were developed, and they will be reviewed in the next section of this chapter.

Hypothesis 4 states that sex has no effect on change scores, and this hypothesis cannot be rejected. $F(6,99) = 1.01$, not significant. With 6,99 degrees of freedom an $F$ statistic of 2.50 or higher would be significant at .05. This finding substantiates the TOBE testmakers' claim that the instrument is without sex bias. There was no statistical difference between male and female gain scores. This finding seems to be contrary to much of the literature that has indicated that females are more school oriented and do better than males. It is possible that in the initial year of formal schooling the favorable orientation toward school for girls has not been established to a degree that would markedly influence the change scores.

Since $H^2$ and $H^4$ could not be rejected, investigation of structure and sex was discontinued at this point. The six sub-hypothesis of $H^1$ and four sub-hypotheses of $H^3$ which were
developed to determine for which categories summer attendance and linguality were associated with statistically significant differences in change scores will now be reviewed.

Sub-hypotheses for $H_1$ concerning effects of attendance for 10 or 12 months which were tested are:

- $H_{1,1}^1$, low classroom structure monolingual females with 10 months attendance = low classroom structure monolingual females with 12 months attendance
- $H_{1,2}^1$, low classroom structure monolingual males with 10 months attendance = low classroom structure monolingual males with 12 months attendance
- $H_{1,3}^1$, low classroom structure bilingual females with 10 months attendance = low classroom structure bilingual females with 12 months attendance
- $H_{1,4}^1$, low classroom structure bilingual males with 10 months attendance = low classroom structure bilingual males with 12 months attendance
- $H_{1,5}^1$, high classroom structure monolingual females with 10 months attendance = high classroom structure monolingual females with 12 month attendance
- $H_{1,6}^1$, high classroom structure monolingual males with 10 months attendance = high classroom structure monolingual males with 12 months attendance

Only six sub-hypotheses could be tested since all bilingual children were in a low structured class. The model was estimated subject to each of the sub-hypotheses, and the F statistic for each sub-hypothesis computed. Table 3 presents the comparisons of predicted change when the 10-month score is 50 according to length of attendance.

$H_{1,1}^1$ compares low classroom structure monolingual females with 10 and 12 months of attendance and cannot be
### Table 3

Sub-Hypotheses of $H_1^1$ - Comparisons of Predicted Change When 10-Month Score is 50 According to Length of Attendance

<table>
<thead>
<tr>
<th>STRUCTURE</th>
<th>LINGUALITY</th>
<th>SEX</th>
<th>ATTENDANCE</th>
<th>F</th>
<th>d.f. (1,99)</th>
<th>Sub-hypotheses of $H_1^1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>MONOLINGUAL</td>
<td>FEMALE</td>
<td>1.49 8.42</td>
<td>3.51</td>
<td></td>
<td>$H_{1,1}^1$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MALE</td>
<td>-1.46 3.35</td>
<td>2.28</td>
<td></td>
<td>$H_{1,2}^1$</td>
</tr>
<tr>
<td></td>
<td>BILINGUAL</td>
<td>FEMALE</td>
<td>-12.2 -1.33</td>
<td>6.85*</td>
<td></td>
<td>$H_{1,3}^1$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MALE</td>
<td>-7.21 -3.44</td>
<td>0.63</td>
<td></td>
<td>$H_{1,4}^1$</td>
</tr>
<tr>
<td>HIGH</td>
<td>MONOLINGUAL</td>
<td>FEMALE</td>
<td>-2.15 5.47</td>
<td>-8.08</td>
<td></td>
<td>$H_{1,5}^1$</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MALE</td>
<td>-3.10 8.93</td>
<td>19.77*</td>
<td></td>
<td>$H_{1,6}^1$</td>
</tr>
<tr>
<td></td>
<td>BILINGUAL</td>
<td>FEMALE</td>
<td>-- --</td>
<td>--</td>
<td></td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MALE</td>
<td>-- --</td>
<td>--</td>
<td></td>
<td>--</td>
</tr>
</tbody>
</table>

* Significant at .05
rejected. \( F (1,99) = 3.51 \) and is not significant at .05. However, with 1,99 degrees of freedom F would reach .05 significance at 3.96 and higher. Although not rejected, this hypothesis revealed a trend approaching the level of significance, showing that monolingual females exhibited higher change scores after twelve months attendance in low structured classrooms. \( H^1,2 \), presenting the same comparison for monolingual males, is not rejected and does not indicate as great an advantage in longer attendance for boys in low structured classes. \( F (1,99) = 2.28 \) and is not significant. This indicates that classroom structure may be a more salient indicator of gain score performance than sex.

\( H^1,3 \), comparing low classroom structure bilingual girls attending 10 months with low classroom structure bilingual girls attending 12 months was rejected with a high level of significance: \( F (1,99) = 6.85, p \leq .05 \). However, when low classroom structure bilingual boys attending 10 months were compared with those attending 12 months \( (H^1,4) \) no difference was exhibited: \( F (1,99) = 0.63 \) and the hypothesis was not rejected. These findings suggest that while bilingual girls experienced a rapid growth in language development during the summer weeks, the gain for bilingual boys was not as strong. Possibly girls of both lingualities are more socially oriented at this early age than are boys, and thereby advantaged by instruction in low structured settings. The sex of the teacher may play a role (all were females in the six participating
centers) and the expectation of more external controls from females may be reassuring to the boys during the first part of their initial year in formal educational settings. Proclivity of boys in the Latino culture to be more active (Macho male role concept) may preclude their comfortable indulgence in primarily verbal activities in the Head Start classroom even at the prekindergarten age.

Comparison of change scores for monolingual females in highly structured classrooms for 10 months as opposed to 12 months (H1,5) presents a strong rejection statistic for the null hypothesis. $F(1,99) = 8.08, p < .05$. This finding is significant at .01 as well, with 1% significance beginning with an $F$ statistic of 7.0. Greatest of all is the level of rejection for the foregoing hypothesis when applied to boys. H1,6, yields an $F$ statistic of 19.77 with 1,99 degrees of freedom. This finding suggests that boys gain best in highly structured classrooms, and is in concert with a number of studies reviewed in the literature. Classroom structure has been traditionally high for minority boys in keeping with the philosophy that these youngsters are more likely to come from homes wherein the father is absent and mothers must employ more external controls to make the boys conform to their rules.

Table 3 shows that those who attend Head Start through
the summer months gain more skills in language development than those who do not attend; that this attendance produces a significant gain for bilingual females, and that such attendance presents greatest advantage for monolingual males in terms of increased TOBE gain scores.

The sub-hypotheses of $H^3$ regarding linguality which were tested are as follows:

$H^{3,1}$ - low classroom structure monolingual females with 10 months attendance = low classroom structure bilingual females with 10 months attendance

$H^{3,2}$ - low classroom structure monolingual females with 12 months attendance = low classroom structure bilingual females with 12 months attendance

$H^{3,3}$ - low classroom structure monolingual males with 10 months attendance = low classroom structure bilingual males with 10 months attendance

$H^{3,4}$ - low classroom structure monolingual males with 12 months attendance = low classroom structure bilingual males with 12 months attendance

Only four sub-hypotheses could be developed and tested for $H^3$ since all bilingual children were members of a low structured class. Table 4 presents comparisons of change scores as predicted when the 10 month score is 50 according to linguality. $H^{3,1}$ indicates that bilingual females were significantly behind monolingual females in language develop skills after the first 10 program months: $F(1,99) = 11.19$, $p < .05$. 
This finding is significant at .01 as well since 1% significance begins at 7.0. \( H^{3,2} \), comparing these two groups of girls after 12 program months yields an \( F \) statistic of 6.56 with 1,99 degrees of freedom and is significant at .05. While monolingual females exhibit the greatest gain the bilingual females have also gained to a statistically significant degree. When boys of both lingualities are compared with each other after 10 and 12 program months no significant differences are found. (after 10 months \( F (1,99) = 1.83 \), and after 12 months \( F (1,99) = 3.17 \). 5% significance begins with an \( F \) of 3.96 and higher. Therefore, it is evident that boys of both lingualities have increased their change scores to a level nearing significance. Table 4 shows that monolinguals gain most.
<table>
<thead>
<tr>
<th>STRUCTURE</th>
<th>SEX</th>
<th>ATTENDANCE</th>
<th>LINGUALITY</th>
<th>F</th>
<th>Sub-hypotheses of H^3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>MONOLINGUAL</td>
<td>BILINGUAL</td>
<td>d.f. (1,99)</td>
</tr>
<tr>
<td>LOW</td>
<td>FEMALE</td>
<td>10 MONTHS</td>
<td>1.49</td>
<td>-12.2</td>
<td>11.19*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 MONTHS</td>
<td>8.42</td>
<td>-1.33</td>
<td>6.56*</td>
</tr>
<tr>
<td></td>
<td>MALE</td>
<td>10 MONTHS</td>
<td>-1.46</td>
<td>-7.21</td>
<td>1.83</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 MONTHS</td>
<td>3.35</td>
<td>-3.44</td>
<td>3.17</td>
</tr>
<tr>
<td>HIGH</td>
<td>FEMALE</td>
<td>10 MONTHS</td>
<td>-2.15</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 MONTHS</td>
<td>5.47</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>MALE</td>
<td>10 MONTHS</td>
<td>-3.10</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 MONTHS</td>
<td>8.93</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

* Significant at .05
B. 10-Month Scores

Only two hypotheses regarding classroom structure could be tested when the 10-month scores were examined, because all bilingual children were in a low structured classroom setting. Two null hypotheses were tested:

1. \( H^1' \) - structure has no effect on 10-month score for monolingual females
2. \( H^2' \) - structure has no effect on 10-month score for monolingual males

Mean 10-month scores for six groups were estimated (using ordinary least squares) and the results are presented in Table 5. The model was then estimated subject to each null hypotheses, and the F statistic for both computed. Table 6 presents a comparison of 10-month scores according to classroom structure, and the F statistic for the two hypotheses. The F statistic for \( H^1' \), investigating the effect of classroom structure on the 10-month scores of girls is 5.92 with 1,106 degrees of freedom. An F value of 3.9 or higher would be significant at the .05 level. Monolingual females were found to have higher 10-month scores when instructed in highly structured classrooms. Hypotheses \( H^2' \) was also strongly rejected. \( F = 6.22 \) with 1,106 degrees of freedom, \( p < .05 \). Monolingual boys have higher 10-month scores when instructed in highly structured classrooms. These findings are in concert with the results of most studies reviewed which investigated the effect of high versus low classroom structure on rate and degree of language skill development. Table 6 indicates that monolinguals achieve highest scores in highly structured settings and that such classrooms pre-
### TABLE 5

**MEAN 10 MONTH SCORES**

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>ESTIMATED VALUE</th>
<th>STANDARD ERROR</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>low classroom structure, monolingual females</td>
<td>46.5</td>
<td>2.43</td>
<td>15</td>
</tr>
<tr>
<td>low classroom structure, monolingual males</td>
<td>43.7</td>
<td>2.10</td>
<td>20</td>
</tr>
<tr>
<td>low classroom structure, bilingual females</td>
<td>38.3</td>
<td>2.72</td>
<td>12</td>
</tr>
<tr>
<td>low classroom structure, bilingual males</td>
<td>43.2</td>
<td>3.14</td>
<td>9</td>
</tr>
<tr>
<td>high classroom structure, monolingual females</td>
<td>53.9</td>
<td>1.79</td>
<td>28</td>
</tr>
<tr>
<td>high classroom structure, monolingual males</td>
<td>50.6</td>
<td>1.79</td>
<td>28</td>
</tr>
<tr>
<td>d.f. = (5, 106) $R^2 = .235$</td>
<td>N = 112</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 6
A COMPARISON OF MEAN 10 MONTH SCORES ACCORDING TO CLASSROOM STRUCTURE

<table>
<thead>
<tr>
<th>LINGUALITY</th>
<th>SEX</th>
<th>STRUCTURE (CLASSROOM)</th>
<th>F</th>
<th>Hypotheses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LOW</td>
<td>HIGH</td>
<td>d.f. (1,106)</td>
</tr>
<tr>
<td>MONO Lingual</td>
<td>FEMALE</td>
<td>46.5</td>
<td>53.9</td>
<td>5.92*</td>
</tr>
<tr>
<td></td>
<td>MALE</td>
<td>43.7</td>
<td>50.6</td>
<td>6.22*</td>
</tr>
<tr>
<td>Bilingual</td>
<td>FEMALE</td>
<td>38.3</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td></td>
<td>MALE</td>
<td>43.2</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

* Significant at .05
sent the greatest advantage for boys.

Summary of Findings

The following results are significant at the .05 level:

A. Change (gain) Scores - 12 Months
1. Bilingual females in low structure classes who attended through the summer were found to have higher change scores than those who did not attend.

2. Monolingual males and females in highly structured classrooms who attended through the summer were found to have higher change scores than those who did not attend.

3. Monolingual females were found to have higher change scores than bilingual females, both those who attended through the summer and those who did not.

B. 10 - Month Scores

Monolingual males and females in highly structured classrooms were found to have higher 10 months scores than those in low structured classrooms.
CHAPTER V
CONCLUSIONS, SUMMARY AND RECOMMENDATIONS

The statistical analysis of the data suggests that continued attendance in Head Start programs through the summer contributes to an additional gain of about ten points on the TOBE Language Development sub-test. This additional gain is about the same regardless of classroom structure or sex. This finding is the high point of the investigation. While comparisons of gains in relation to linguality and classroom structure were of interest, and the results sometimes surprising, the upward characteristic of the change score for all groups of children continuing through the summer was of greatest significance. The assumption that females of both lingualities would achieve the higher change scores was borne out by the data, while the expectation that bilingual children would exceed monolinguals in rate of gain over the summer was not established. At this point one can but speculate as to the basis for the findings.

Although the program was designed for twelve months attendance it is noted that approximately one-third of the children traditionally have not continued through the summer months in Chicago Board of Education Head Start sites. The reasons most frequently advanced by parents for not sending their youngsters during the summer are a desire for a summer vacation and inability to deliver the prekindergarten children to the centers when older siblings are out of school. It is interesting to note that the "drop out" rate was greatly
diminished during the summer months of the 1971 school year when bus transportation was provided for the Head Start children in the area populated by the subjects of this investigation.

One important facet of this study was omitted upon advice of members of the investigator's committee due to the growing length and complexity of the study. This was the questionnaire designed and validated by the investigator for use with all Head Start teachers in the Chicago Public Schools. A copy of the questionnaire is included in Appendix A. Although analysis of this data has been omitted, the investigator would like to share the following information. Eighty-one questionnaires were sent to Chicago Public School Head Start teachers, and seventy were returned giving a return of 87%. Ninety percent of the teachers selected "concentrated program in summer with increased outdoor activities" as the first factor in shaping the summer curriculum. Second (83%) was the fact that "children are more relaxed with staff and volunteers" and third (81%) was the "increased number of field trips provided."

Under optional comments one teacher of bilingual children stated "bilingual children start to speak more English toward the end of the school year. The summer program seems to be a more relaxed atmosphere with no regular school schedule to adhere to. Then, there isn't that long period between June and September to forget English."

Endogeniety of attendance remains an area for consideration and concern. The factors which influence parents to continue
their children in Head Start programs through the summer months could be investigated. This matter could be evaluated with a logit or probit model (Thiel, 1971) with summer attendance as the dependent variable. The independent variable could be a change score for the first ten months, or the parents' impressions of the program after ten months. The limited nature of the change score might also be considered should this study be replicated. The change score is a limited variable, the limits depending upon the 10-month score. This information could be incorporated into the specification of the model, and the model estimated according to maximum likelihood. (Tobin, 1958)

Finally, the reader is encouraged to heed the plea of Bronfenbrenner (1974) that preschool program evaluation not be limited to scores on standardized tests. "It is of the utmost importance to recognize that the failure of one or another form of preschool intervention to increase or maintain the levels of performance in objective tests of intelligence or achievement must not be interpreted as evidence that such programs are not contributing in important ways to the development and welfare of the child, and for that matter, of his family, community, and even the society as a whole " (p.3).

The investigator soon discovered that few studies employing standardized tests to evaluate prekindergarten children were available. In reviewing the suggestions of a panel of learned individuals in early childhood education that
included Courtney Cazden, Edgar Epps and Susan Gray; Anderson (1972) cautions against limiting studies of early childhood education to standard measures. The panel of fifteen experts reviewed concerns about the special statistical and methodological problems of measuring the behavior of young children and the impact of their environments because of the limited response system of young children and the rapid changes that occur early in life. They considered construct-based measurement, particularly the problems of population and ecological validity that are inherent in the use of measures with different cultural groups and the dependency of the advancement of measurement research and development on appropriate policy decisions. They also noted that a limited number of trained persons are available to do the evaluations. The panel concluded that investigations involving multiple domains and multiple measures have a greater chance of advancing knowledge in the field of early education than do studies of single constructs or measures, however global. They also noted that current methods of measurement that have been found to be appropriate for older age groups cannot necessarily be applied to the assessment of young children.

Since the initiation of Head Start, the experimental pre-school programs being developed have concentrated on attempts to enhance the cognitive functioning of the children. In the development of curriculum for Head Start programs, the concept of compensation for deficiencies inherent in children of the poor were most often identified as language skills and intellectual functioning. Consequently, experimental pre-
school program developers have stressed didactic training in language and cognition in contrast to the discovery and play oriented traditional nursery schools of earlier times.

The apparent success of highly structured programs in providing more immediate measurable gains in terms of language development notwithstanding, the investigator looks forward to long term research which will validate the concept that low structured environments may provide the most lasting gains for Head Start and indeed all prekindergarten aged children. Anker, Foster McLane, Sobel and Weissbourd (1974) state that "a good teacher functions as a model for young children. If she values autonomy, self-motivation, social interactions, exploration and experimentation, flexibility, and the acquisition of skills, then she will reinforce such behaviors as she interacts with the children. Whether such attributes can be enhanced in rigidly structured and exclusively cognitive programs is indeed questionable " (p.213).
BIBLIOGRAPHY


Fowler, W. On the value of both play and structure in early education. *Young Children* 1971. 27(1), 24-36.


Hilton, E. Do we have to prove everything? Instructor, LXXXII, May 1973, 8.


Schreiner, R., & Tanner, L. The history of reading instruction. In The Reading Teacher, XXIX-February, 1976, 468-73.


Villiger, T. E. The future of federal funding. In "For Children's sake...What are we doing?" Chicago 4-C Forum, sponsored by Chicago Community Coordinated Child Care Committee. Chicago, 1972.


TEACHER STRUCTURE CHECKLIST

Nursery School Teacher Structure as it Relates to Teacher Control or Direction

Yes  No
1. Children move freely about the playroom and playground.
2. Children select and use materials without adult interference.
3. All children usually engage in the same activity at the same time.
4. Children are expected to join and remain with a group activity which is directed by the teacher.
5. Children's activities are interrupted when the clock says it is time for the next scheduled activity.
6. Children may spend as much time as they choose to complete their work or their play.
7. Group activities are encouraged more than individual activities.
8. Loud and boisterous play is prohibited at all times.
9. Sharing materials and equipment is required by the teacher regardless of the child, situation or activity.
10. Materials and equipment are always put away by the children following their use of them.
11. The teacher often sits near an activity without entering into it, indirectly encouraging and facilitating play.
12. Adults talk and listen to a child on a face to face level.
13. When children speak, offer ideas, contribute suggestions, share an experience, etc., adults listen to them.
14. The teacher and other adults tell children what to do.
15. The physical environment, with its clearly defined centers of interest, tells children what they may do.
16. Children are required to walk in line when moving from place to place.
17. Children speak only when given permission.
18. The teacher positively acknowledges children's contributions whether they are ideas, suggestions, experiences or actions.
19. Children wait for teacher instructions and patterns before constructing their own products.
20. The teacher and other adults speak to children in positive language.
21. Children's requests, desires or wishes often are ignored.
22. The teacher and other adults freely give praise to children for each child's efforts.
23. Children initiate ideas and plans for work and play, and adults are available to help the children carry them out.
24. The schedule of the day's events or plans is rigidly adhered to.
25. Materials and equipment for the children's use are where children can see them and where children can help themselves to them.

(High structure items: 3, 4, 5, 7, 8, 9, 10, 14, 16, 17, 19, 21, 24)
(Low structure items: 1, 2, 6, 11, 12, 13, 15*, 18, 20, 22, 23, 25)
The Teacher Structure Checklist

The Teacher Structure Checklist was developed by Dr. Patricia Rowe Webster as a part of her unpublished dissertation, "Teacher Structure as it Relates to the Expression of Sex-Appropriate Choices in Nursery School Children", completed at the University of Maryland, in 1969.

Originally designed to form dichotomy groups of high and low teacher structure, the checklist was developed to assess the degree of teacher control or direction which was visible to observers of prekindergarten teachers.

The instrument was validated by submitting the 25 items to directors of Laboratory nursery schools at universities throughout the United States. "Item agreement between the experts of 88 percent was obtained on all 25 items; 100 per-cent was obtained on 22 out of the 25 items." (Webster, 1969)

Scoring was developed which called for three 50 minute observations with the rater scoring each item in one of the three categories: agreement, disagreement or not observed. A total score for all items was then computed and each teacher was designated a high or low structure teacher on a continuum of 50 points. ("Interrater reliability was secured by means of tetrachloric correlations. Overall results were as follows: Observer I and Observer II $r_t = .81$; Observer I and Observer III $r_t = .86$; and Observer II and Observer III $r_t = .93$.")

p. 215
For the current study the investigator completed three checklists for each of the six teachers during 50 minute observations on three different days. Each teacher was asked to fill out a checklist rating herself with the 25 items. The four scores were then compiled and classified.
Dear Head Start Teacher:

I am conducting a survey to measure the merit of a full year (twelve month) Head Start program over a ten month (no summer session) program in terms of gains made by the children in language development. Teacher assessments of the summer program is one part of the survey. Your help is needed in filling out the attached questionnaire. You are not asked to identify yourself or your center on the questionnaire. Response envelopes are numbered only to facilitate a follow-up request if your reply is not received.

Will you please assist me in conducting this survey by forwarding your completed questionnaire in the enclosed envelop this week? Your assistance will be greatly appreciated, and I will share my final report with you.

Sincerely,

Evelyn A. Green
Principal, Avalon Park

This questionnaire is being sent to full year Head Start teachers. Please answer the following so that your orientation to summer Head Start sessions can be considered.

1. Did you teach any of the summer only 8 week Head Start sessions which began in 1965 and were offered for a few summers following? _____yes _____no

2. How many years have you taught the full year Head Start program (including a summer session) _____years

A. Do you use a packaged approach and-or kit (Distar, Peabody, Swirl, etc.) as a part of your curriculum for language development during the September through June months? _____yes _____no

B. If yes, what approach (or kit) do you use? ____________

C. Is your approach to language development the same during the summer session as for the ten months preceding? _____same _____same plus additions _____entirely different

D. If your approach is different during the summer check ☑ the factors you believe account for the difference. If not applicable enter ☑ in the box.

☐Pleasant weather ☐Increased parent involvment
☐Age of children(older) ☐Expanded experiential background
☐Staggered attendance ☐Increased number of field trips
Concentrated program in summer/increased outdoor activity  □ Children more relaxed with staff and volunteers  
More materials—maximum delivery of new manipulatives □ Children know each other better  
Increased common (shared) experiences □ Separation problems of children ended or decreased  
More volunteers during summer □ Better daily attendance during summer  
Other ____________________ □ Increased inservice of staff

Please enter a #1, #2, and #3 after the three factors above which you consider most significant in shaping summer curriculums.

E. The eight week (summer only) Head Start programs which began in 1965 were discontinued after a few summers because evaluators said gains made by the children were insignificant. Do you: ___ agree ___ disagree ___ undecided

F. The summer session which has followed as a part of the full year Head Start program for the past ten years may be deleted to decrease the budget. How do you estimate the effect of this change?

□ Will have no negative effect on program ability to develop children  
□ Will have some negative effect on program ability to develop children  
□ Will have great negative effect on program ability to develop children

G. How do you evaluate the gains made by the Head Start children in language development during the summer weeks of the full year:

□ No noticeable and measurable gains in language development  
□ Few noticeable and measurable gains in language development  
□ Abundant noticeable and measurable gains in language development

H. Have you worked with bilingual Head Start children? ___ yes ___ no  
If yes, how do you evaluate gains made by bilingual children in language development during the summer months of a full year?

□ Same as gains made by monolingual children  
□ Greater gains made by bilingual children during summer session  
□ Fewer gains made by bilingual children during summer session

I. How do you estimate "losses" in language development sustained by children who do not attend the summer portion of full year?

□ Insignificant loss as compared to children who attend summer  
□ Mildly significant loss as compared to summer attenders  
□ Highly significant loss as compared to summer attenders

J. Optional comments on length (time in months) of Headstart program and outcomes:__________________________________________________________

__________________________________________________________

Thank you. Please mail reply this week.
UPPER AND LOWER BOUNDS OF THE CHANGE SCORE AS A FUNCTION OF THE 10 MONTH SCORE

FIGURE 1
ESTIMATED REGRESSION LINES FOR 12 PARAMETERS TO BE TESTED

**Figure 2**
APPENDIX B
APPENDIX B

REPORT OF INVESTIGATION OF POSSIBLE INTERACTION EFFECTS BETWEEN THE MAJOR VARIABLES UNDER INVESTIGATION IN THE STUDY

Preliminary tests for interaction effects between the variables under investigation in this study were made before the final model which was used to test the four hypotheses was developed.

The initial analysis of the data dealt with two questions:

1) What gains in language development may be attributed to summer attendance of Head Start?

2) How does summer attendance interact with degree of classroom structure (instruction), linguality/race, and sex to influence gains in language development?

Definition of Variables and Description of Data

Six Head Start centers were chosen randomly from eighteen known to the investigator. Children who attended from September 1974 to June 1975 were evaluated with the TOBE test of language development in June, 1975. Approximately one half of the children continued attendance through the summer and were available for testing in September, 1975. Those that attended during the summer and those who did not were evaluated with the TOBE again in September, 1975. Each child's standardized June score was subtracted from his standardized September score to form a gain score. The gain score is the measure of language development.

The Teacher Structure Checklist developed by Webster, (1974) was used to classify the teacher at each center as
either high or low in degree of structure of curriculum presentations. Five of the centers were attended by black monolingual children. The sixth center was attended by Spanish surnamed bilingual children. Each center contained a nearly equal mix of the sexes. All children were of prekindergarten age.

Statistical Analysis

A four-way analysis of variance was used to estimate the effects of the four binary variables:

A - High or low classroom structures
B - Black monolingual or Spanish-surnamed bilingual
C - Male or Female
D - 10-month or 12-month attendance

Since all Spanish-surnamed bilinguals were members of a low structured classroom, the AB interactions could not be estimated. The following model is assumed:

\[ \Delta_{ijkl} = \mu + \alpha_i + \beta_j + \gamma_k + \delta_{ij} + \epsilon_{ijkl} \]

\[ \alpha_i = \beta_j = \gamma_k = \delta_{ij} = 0 \]

\[ \beta_{ik} = \beta_{j} = \beta_{k} = \beta_{ij} = \beta_{jk} = \beta_{ik} = 0 \]

\[ \delta_{ijkl} = 0 \]

\[ \epsilon_{ijkl} \sim N(0, \sigma^2) \]

\[ \Delta \] is the gain score; the \( \alpha \)'s are the main effects; the \( \beta \)'s are the two-way interactions; and the \( \gamma \)'s are the three-way interactions. \( \epsilon \) is an error term. This model was estimated using ordinary least squares. The results are presented in Table A.

The F ratio of 4.699 with 12,99 degrees of freedom indi-
cates rejection of the null hypothesis that all effects equal zero. The model was estimated subject to the assumption that all interactions equal zero and an F statistic of 1.22 was obtained from the test. Therefore, the null hypothesis of no interactions could not be rejected. \( (F(7,99) = 1.22, \text{ not significant}) \). The t ratio of 4.921 for the main effect of attendance indicates rejection of the null hypothesis that the main effect of attendance equals zero. This statistic is significant at .05.)

The statistical analysis suggests that continued attendance of Head Start throughout the summer contributes an additional gain of about ten points on the TOBE. This additional gain is about the same regardless of classroom structure, linguality/race, or sex of the children. This conclusion is conditioned on the assumption that the explanatory variables are predetermined.

A variable which may be important, but which has not been quantified, is the teaching ability of each teacher. Difference in teaching ability might account for differences in gains, as mentioned throughout the review of the literature in preparation for this study. If the differences in teaching ability are large, then the model is misspecified and the estimates are biased.

The questions raised for review in this Appendix can now be answered. Subject to the qualifications discussed in this section (predetermined variables and equal teaching ability
### TABLE A

**ESTIMATION OF UNCONSTRAINED MODEL**

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Estimated Coefficient</th>
<th>t Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.036</td>
<td>-0.032</td>
</tr>
<tr>
<td>A</td>
<td>-2.260</td>
<td>-2.399 *</td>
</tr>
<tr>
<td>B</td>
<td>3.385</td>
<td>2.780 *</td>
</tr>
<tr>
<td>C</td>
<td>0.464</td>
<td>0.413</td>
</tr>
<tr>
<td>D</td>
<td>5.661</td>
<td>4.921 *</td>
</tr>
<tr>
<td>AC</td>
<td>1.432</td>
<td>1.520</td>
</tr>
<tr>
<td>AD</td>
<td>-0.059</td>
<td>-0.058</td>
</tr>
<tr>
<td>BC</td>
<td>-0.379</td>
<td>-0.311</td>
</tr>
<tr>
<td>BD</td>
<td>-0.262</td>
<td>-0.206</td>
</tr>
<tr>
<td>CD</td>
<td>-0.446</td>
<td>-0.332</td>
</tr>
<tr>
<td>ACD</td>
<td>2.212</td>
<td>1.761</td>
</tr>
<tr>
<td>BCD</td>
<td>0.574</td>
<td>0.354</td>
</tr>
<tr>
<td>F Ratio</td>
<td>4.669</td>
<td></td>
</tr>
</tbody>
</table>

* Significant .05

A = High or low structure classroom  
B = Black monolingual or Spanish-surnamed bilingual  
C = Male or female  
D = 10-month or 12-month attendance
for the six teachers) an additional gain of about ten points on the TOBE language development test can be attributed to summer attendance of Head Start classes. Summer attendance does not appreciably interact with the other variables considered.

**SUMMARY**

To estimate the effects of the four variables, a four-way analysis of variance regression approach was used. By comparing the sum-of-squared residuals from an estimation that allowed for all interactions with the sum of squared residuals from an estimation that allowed for no interactions the null hypotheses of no interactions could not be rejected. The F statistic of 1.22 with 7 and 100 degrees of freedom was not significant at .05. Using t tests all main effects except sex were significant at p < .05:

1. No interactions (F = 1.22)
2. Low structured classrooms increased gain score by 4.5 (t = 2.4)
3. Monolingual children had higher gain scores by 6.8 (t = 2.8)
4. Sex had no effect on gain scores (t = .41)
5. Summer attendance increased gain scores by almost 11 points (t = 4.9)
Findings 2, 3, 4 and 5 above formed the basis for investigations in the major study. It was determined that a model presenting a covariate from which all estimations could be derived, and which would also control for all possible interactions, would provide the best method for analyzing the data. The 10 month score was to be introduced as a covariate in order to establish an adjusted and controlled beginning point for the estimates.
This dissertation submitted by Evelyn Green has been read and approved by the following Committee:

Dr. Marie Piers
Professor, Erikson Institute For Early Childhood Education.

Dr. Dorothy Anker,
Professor, Erikson Institute For Early Childhood Education

Dr. Jasper J. Valenti
Associate Dean, Professor Administration and Supervision, Loyola

Dr. Barney Berlin, Chairman
Associate Professor, Curriculum and Instruction, Loyola

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

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

DIRECTOR'S SIGNATURE:

DATE: 8/31/71