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FIRST-GRADE PERFORMANCE OF
MIDDLE-CLASS CHILDREN

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PRESCHOOL EDUCATION AS A FACTOR IN
FIRST-GRADE PERFORMANCE OF
MIDDLE-CLASS CHILDREN

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PRESCHOOL EDUCATION AS A FACTOR IN
FIRST-GRADE PERFORMANCE OF
MIDDLE-CLASS CHILDREN

The relationship of socioeconomic status and school achievement has been the subject of recurrent research during the last sixty years (e.g., Bereiter & Engleman, 1966; Davis, 1948; Deutsch, 1963; Giammatted, 1967; Havighurst, 1964; Mayer, 1961; Neighbours, 1910 and Van Denburg, 1941). Positive relationships between socioeconomic status and vocabulary, arithmetic ability, reading ability, perceptual-motor development, and health and personal adjustment were consistently found in these and other studies. Early childhood curriculum planners, cognizant of these studies, have developed preschool programs with the socioeconomic status of the child in mind (Butler, 1970; Weber, 1969). Preschool education planners, having examined middle-class values—the crucial factors of verbalism, parental stimulation and control, competition, achievement motivation, perfectionism, and orientation to the future—have tried to saturate the preschool program with this climate in hopes that it would foster advanced development for middle-class children. However, a controversy has emerged over what early childhood experience should provide young children of different socioeconomic backgrounds. Elking (1969) states that a battle exists between "traditional middle-class preschool teachers who see preschool education as development within, and the new breed of preschool workers who see preschool education as enforcement from without

(Elkind, 1969, p. 322)." Elkind designates the former orientation as enrichment and the latter as instruction. He describes the conflict as existing between those who advocate enrichment for middle-class children and those who advocate instruction for lower-class children. The enrichment position holds that readiness is a phenomenon determined by the child's own rate of development and that academic instruction adds additional pressures upon the middle-class child to that already received in his home. The instruction position holds that early stimulation results in superior academic achievement for the lower-class child without negative personality or social effects. The instruction position further maintains that we have underestimated the abilities of our lower-class children, who can learn faster than we now have them learning. Under the instructional viewpoint, it is believed that the young child's intellectual ability is more appropriately utilized.

Confusion in educational practice has existed over the social-class orientation of the preschool curriculum. Should we design preschool programs for children contingent on their early home experiences, or should we offer contrasting experiences in preschool? Bereiter & Englemann (1966) contend, in attempting to offset or contrast the middle-class environment by offering a different experience, the preschool has taken on many of the characteristics of the lower-socioeconomic home environment, a situation unacceptable to middle-class parents and those preschool teachers who espouse the enrichment approach. Bereiter and Englemann (1966) further contend that the

lower-class child experiences "cultural shock" and is unable to benefit from a middle-class oriented preschool. The middle-class child does not experience any cultural or social adjustments and is "ready to learn how to learn".

Investigations that have examined the preschool program designed for the culturally disadvantaged or the Head Start child provide conflicting conclusions as to their effects. Numerous studies presented evidence that preschool training resulted in student gains in I.Q. (e.g., Brazziel, 1967; Karnes, 1968; Fuller, 1960; Osborn, 1967; and Seifert, 1969); in achievement (e.g., Allerhand, 1965, Chesteen, 1966; Morris & Morris, 1966; and Wolff & Stein, 1967; Faustman, 1967) over those children without preschool training. Several studies concluded, however, that the late-starter (non-preschool experienced) often surpassed the early starter (preschool experienced) in reading, achievement and social-emotional adjustment when matched for sex, age, intelligence and home conditions (Halliwell, 1964; Hampleman, 1959; Keister, 1941; and King, 1955).

The preschool programs designed for the culturally privileged or the socioeconomic middle-class child have not received the same research interest as have the programs for the culturally disadvantaged (Butler, 1970; Bereiter & Englemann, 1966; and Weber, 1969). Several studies have suggested that preschool experience may not add significant academic readiness for the middle-class child to that readiness already obtained in the home (Borum & Livson, 1968; Crawford & Eason, 1970; Fuschillo, 1968; Gray, 1969; and

Prendergast, 1969,). However, only in the Crawford & Eason study was preschool curriculum controlled (but unspecified) and their study indicated that within the same socioeconomic status, kindergarten experienced and non-kindergarten experienced children did not differ in achievement. The results obtained from the above studies are in basic agreement with the extensive study of school achievement and socioeconomic status by Coleman, et al., 1966. "The first finding is that schools are remarkably similar in the way they relate to the achievement of their pupils when the socioeconomic background of the students is taken into account. It is known that the socioeconomic factors bear a strong relation to academic achievement. When these factors are statistically controlled, however, it appears that differences between schools account for only a small fraction of differences in pupil achievement (Coleman, et al., p. 21)." They further point out that improving the school or educational setting of a socioeconomic disadvantaged pupil may increase his achievement more than would improving the school of a socioeconomic advantaged child increase his.

In the present study the only preschool experience available to middle-class children was provided by private preschools. These schools offered an enrichment preschool experience geared to the middle-class child. The schools described their programs as a challenging program without pressure in regard to formal academic training. Number and reading readiness opportunities were introduced not through explicit instruction or direction but through games, music,

alphabet, stories, dramatic play, art, science, history, movies, free play, physical education, poems, and special visitors. Special number and reading workbooks were not introduced until much preparatory work was accomplished in terms of developing self-concept, self-understanding, peer relationship development, and satisfactory emotional maturity. Most of the directors interviewed did not feel workbooks stifled creativity in their children, because they were not used exclusively in the total program. In a typical nursery or kindergarten class, workbooks were not introduced until the last half of the "school year," and then used in a controlled and intermittent fashion, such as only two days a week. The general philosophy of the preschool program used in this study was that at the preschool level, attention is focused on the child.

This study investigated the difference in the first-grade performance of a group of middle-class children who attended preschool and a group of middle-class children who did not attend preschool. The effect of preschool experience (P.E.) and no preschool experience (N.P.E.) was compared on the basis of achievement in reading, arithmetic, and perceptual motor development over a five-month (Fall-Spring) first-grade experience. It was decided to focus on reading, arithmetic, and perceptual-motor development because these are generally considered to be of primary importance in first-grade.

Besides the central question of whether preschool experience will reflect any difference in first-grade readiness over that gained

in the middle-class home, the following five specific questions were asked:

1. How does the length (measured in months) of a child's preschool training effect his readiness and achievement for the first-grade?
2. Do male and female socioeconomically middle-class children, who attended and who did not attend preschool, differ in first-grade achievement?
3. How does preschool experience or lack of preschool training affect first-grade achievement of children of different intellectual abilities?
4. Will achievement and perceptual-motor development differ across preschool and non-preschool experienced groups when compared on three divisions of the middle-class social level?
5. Will preschool-experienced youngsters demonstrate a greater achievement gain (Fall-Spring comparison) during a five-month period in first grade, when compared to children with no preschool experience?

METHOD

Subjects. A sample of 106 Caucasian subjects (Ss) (50 males and 56 females) was randomly selected from seventeen first-grades in six elementary schools. Fifteen Ss originally selected at the pre-test were not included at the post-test because of frequent absences or because they moved out of the school district. Of the 15 Ss lost by this manner, 8 Ss were preschool experienced (P.E.) and 7 Ss were non-preschool experienced (N.P.E.). The P.E. and N.P.E. groups comprised 58 Ss each, with 25 males and 28 females in each of the groups. First-grade repeaters were not used in the study.

There were 388 first-graders in the six schools. The schools

were located in a city of approximately 60,000 in northeast Louisiana. The six schools were further characterized as residing in middle-class residential areas, from which they drew their students.

Steps in subject selection and identification of subject social class index. The first step in selecting the sample was to identify all Caucasian first graders with and without preschool experience. This information was obtained from standardized registration-information cards kept by the six schools. Preschool attended, length of attendance, chronological age, occupation of parents, and address (dwelling area) were obtained from the information cards. To verify the information on preschool attendance, each director of the pre-schools involved was contacted. Approximately 65 per-cent of the Caucasian first-graders attended preschool for at least a minimum of nine months (one school year), to a maximum of 27 months (three school years).

The second step in subject selection was to identify the students according to social class. The Warner, Meeker and Eell Scale (1957) was used. Middle-class levels were defined by computing a composite weighted score of 23 to 50 on the scale, which represented upper-middle to lower-middle respectively. The ratings were obtained on occupation, dwelling area, and source of income. Dwelling area characteristics as defined by Warner, Meeker and Eell were confirmed by the Parish (County) Tax Assessor for this area. Approximately 90 per-cent met the middle-class criteria established for the study.

Over 245 children (out of an original population of 388) still

remained as potential subjects. A stratified constant sampling technique with randomization was used to obtain the final sample of approximately 60 Ss in each of the P.E. and N.P.E. groups. A constant of thirty-eight per-cent was used in selecting the sample. Nineteen per-cent preschool experienced and nineteen per-cent non-preschool experienced were selected from the total number of Caucasian first-graders in each of the six schools.

Characteristics of the P.E. and N.P.E. Groups. The P.E. Ss in the study received preschool training in traditional enrichment preschools as opposed to a cognitive, instructional preschool programs, outlined in the introduction. Attendance by P.E. children was voluntary. Tables 1 and 2 represent subject characteristics of the P.E. and N.P.E. groups respectively.

Description of first-grades. Grade-one curriculum within the six schools placed emphasis upon the language arts and mathematics but also stressed the child's development in the area of social living, physical education, art and music. Social studies are included in the curriculum in order to widen the student's understanding and awareness of the world about him. Implementation of an instructional philosophy was left up to the individual school, and the traditional self-contained primary classroom approach was used. Curriculum standardization was enhanced because all six schools were basically under the same school regulating system. Thus, to a great extent, text books and other instructional aids were similar. No classroom contained more

TABLE 1
CHARACTERISTICS OF SUBJECTS WITH
PRESCHOOL EXPERIENCE (PE)

	MALE		FEMALE		MALE-FEMALE	
	MEAN	ST DEV	MEAN	ST DEV	MEAN	ST DEV
SEI (Socioeconomic Index)	31.4	4.7	32.1	5.0	31.8	4.9
PE in Months	14.4	6.5	15.5	6.6	14.9	6.5
CA in Months-Pre-Test	75.6	3.2	75.6	3.7	75.6	3.5
MA in Months-Pre-Test	84.0	13.2	83.8	13.4	83.9	13.3
MA in Months-Post-Test	88.0	12.5	89.3	10.8	88.7	11.6
IQ Pre-Test	106.9	9.1	106.3	10.4	106.6	9.8
IQ Post-Test	105.5	11.8	105.6	9.6	105.5	10.7

N = 53
Males = 25
Females = 28

TABLE 2
CHARACTERISTICS OF SUBJECTS WITH
NO PRESCHOOL EXPERIENCE (NPE)

	MALE		FEMALE		MALE-FEMALE	
	MEAN	ST DEV	MEAN	ST DEV	MEAN	ST DEV
SEI (Socioeconomic Index)	36.4	3.7	36.0	2.9	36.2	3.3
CA in Months-Pre-Test	76.2	4.1	74.3	3.5	75.2	3.9
MA in Months-Pre-Test	75.4	13.4	74.3	12.4	74.8	12.9
MA in Months-Post-Test	82.4	14.8	80.9	10.8	81.6	12.9
IQ Pre-Test	98.6	12.7	98.7	10.8	98.6	11.7
IQ Post-Test	100.1	11.9	100.3	11.7	100.2	11.8

N = 53
Males = 25
Females = 28

than twenty-five students with a mean of 23 students per teacher. All teachers were socioeconomically middle-class.

Instrumentation. The Wide Range Achievement Test (WRAT), (Jastak & Jastak, 1965), Peabody Picture Vocabulary Test (PPVT), (Dunn, 1965), and the Bender Gestalt Test for Young Children (Koppitz, 1964) were the instruments used to measure achievement, I.Q., and perceptual-motor development respectively.

Examiners. Three university employed professionals assisted in the collection of data. Each examiner had six years of experience in the testing of school children. All were employed in a diagnostic center, specializing in the evaluation of exceptional children. The examiners were skilled in the administration of the instruments used in the study.

Procedure. All Ss were tested individually. The subjects were tested (pre-test condition) during the last two weeks in October, 1972, allowing enough time for accommodation to their school setting. Post-testing occurred the first two weeks in April, 1973, allowing a full five months of first-grade experience between the pre- and post-test conditions. The PPVT, WRAT and Bender tests were administered at both the pre- and post-test conditions. Two of the four examiners administered and scored the Wide Range Achievement Test (WRAT) only, as they were skilled in this tool. The other two examiners administered the Peabody Picture Vocabulary Test (PPVT) and the Bender-Gestalt Test, as they were skilled in these tests. Separate scoring with consultation

on all Bender test results was accomplished by the two examiners.

RESULTS

The dependent variables in this study were the performances in reading, arithmetic and perceptual-motor skills by Ss over a five-month, pre- and post-test interval. Preschool experience (PE) and no preschool experience (NPE) of Ss represented the comparison variables of the study. Sex, I.Q., length of preschool experience, and level of middle-class status represented additional comparison variables under investigation. Pre-test scores (reading, arithmetic and perceptual-motor) and I.Q. were treated as concomitant variables in adjusting the post-test scores for the resulting analysis of variances. Table 3 represents the summary table for the analysis of covariance (Bancroft, 1968) for the pre-test scores and I.Q. on reading ability, arithmetic ability and perceptual-motor skills.

Effect of covarying pre-test scores. A significant F score was obtained for reading, arithmetic and perceptual-motor scores when pre-test scores were adjusted for their effect on the post-test scores. The significant F scores indicated that the differences obtained on the post-test scores were attributable to the effects of the initial (pre-test) scores.

Effect of covarying I.Q. scores. No significant effect was indicated for I.Q. as a concomitant variable on reading, arithmetic and perceptual-motor scores. Performance differences between pre- and post-test scores were not attributable to the I.Q. scores of the subjects.

TABLE 3

Analysis of Covariance for Pre-test Scores and
I.Q. (Concomitant Variables) for Reading (R)
Arithmetic (A) and Perceptual-Motor Skills (PM)

Source	Reg. Coef.	F	Prob.
Pre-test Scores	.77	70.89	<.01
R I.Q.	.16	3.60	.06
Pre-test Scores	.59	53.56	<.01
A I.Q.	.16	1.01	.31
Pre-test Scores	.67	96.54	<.01
PM I.Q.	.12	1.34	.24

Additional data analysis was conducted in regards to I.Q. scores for the PE and NPE subjects at the pre- and post-test conditions. A correlated t-test for paired scores was used to assess if there was a difference between the pre-test I.Q. and post-test I.Q. scores for the PE and NPE groups respectively. A comparison ($t=.76/df=52$) was not significant for the PE group as well as the comparison ($t=1.44/df=52$) for the NPE group. These results indicate that no significant change occurred in the I.Q. of the subjects between the pre-test and the post-test for both groups. However, a comparison of the PE group post-test I.Q. mean to the NPE post-test I.Q. mean ($t=8.28/df=51$) was significant. An even larger difference was obtained when pre-test I.Q., PE/NPE comparisons were made ($t=12.69/df=51$). While the I.Q. means differed, the standard deviations of the I.Q.'s for the two groups did not differ ($F=1.42/df=51$, and $F=1.21/df=51$) for the pre-test and post-test standard deviation analysis, respectively. Tables 1 and 2 provided all I.Q. means and standard deviations.

The intelligence scores of the Ss for both the PE and NPE groups, were not a significant factor in contributing to differences on the dependent variables of reading, arithmetic and perceptual-motor scores (Table 3). When covaried and adjusted, I.Q. as an effect, was not significant on the pre-test and post-test performance of the subjects. Thus, the fact that the PE and NPE sample I.Q. means differed was not critical to the resulting analysis of variances of the performances in reading ability, arithmetic ability and perceptual motor skills (Tables 4, 5, and 6).

TABLE 4

An Analysis of Variance (adjusted for pre-test scores as concomitant variates) on Reading Scores Classified by Sex (S), Socioeconomic Status (SE), Preschool Experience or No Preschool Experience (PE/NPE), and Number of Years of Preschool Experience (Y)

Source	df	MS	F	P
S	1	1.42	.01	NS
SE	2	105.64	1.36	NS
PE/NPE	1	12.46	.16	NS
PE/NPE x S	1	53.05	.68	NS
PE/NPE x SE	2	187.34	2.42	NS
Y	2	154.60	2.00	NS
Error	95	77.23		

TABLE 5

An Analysis of Variance (adjusted for pre-test scores as concomitant variates) on Arithmetic Scores Classified by Sex (S), Socioeconomic Status (SE), Preschool Experience or No Preschool Experience (PE/NPE), and Number of Years of Preschool Experience (Y)

Source	df	MS	F	P
S	1	53.67	.06	NS
SE	2	50.33	.56	NS
PE/NPE	1	.93	.01	NS
PE/NPE x S	1	109.60	1.23	NS
PE/NPE x SE	2	9.33	1.0	NS
Y	2	63.52	.71	NS
Error	95	88.46		

TABLE 6

An Analysis of Variance (adjusted for pre-test scores as concomitant variates) on Perceptual-Motor Scores Classified by Sex (S), Socioeconomic Status (SE), Preschool Experience or No Preschool Experience (PE/NPE), and Number of Years of Preschool Experience (Y)

Source	df	MS	F	P
S	1	42.46	.33	NS
SE	2	73.91	.59	NS
PE/NPE	1	4.11	.03	NS
PE/NPE x S	1	74.47	.59	NS
PE/NPE x SE	2	25.02	.19	NS
Y	2	127.87	1.02	NS
Error	95	125.23		

Preliminary analysis of the data (Appendix N) yielded significant results. However, these results were obtained without treating pre-test and I.Q. scores as concomitant variables. Thus, no adjustment was made for the effect of the initial scores (pre-test) on the final scores (post-test) in reading ability, arithmetic ability and perceptual-motor skills. An examination of tables one to six in Appendix N indicated consistent significant effects ($p < .05$) of socioeconomic middle-class levels, sex, I.Q. and preschool experience on reading, arithmetic and perceptual-motor performance. When the pre-test scores were adjusted (for the deviations from the regression) the significant differences noted in Appendix N, tables 1-6, were not retained. Tables 7, 8, and 9 in Appendix N indicated that even without the covariance adjustments for the pre-test scores, no significant differences were found in amount of gain (or loss) between the pre- and post-test conditions except for the interaction effect of PE/NPE x SE in reading, and the I.Q. effect in perceptual-motor development. These results are in essential agreement with the significant pre-test covariance treatment (Table 3) which indicated that those who scored high and low at the pre-test, performed similarly at the post-test and their relative positions within the PE and NPE groups did not alter.

Tables 4, 5, and 6 represent the summary tables for analysis of variances with the covariance adjustment for pre-test scores in reading ability, arithmetic ability and perceptual-motor skills respectively.

Effect of sex. The main effect for sex of the student was not

significant on the dependent variables of reading, arithmetic and perceptual-motor skills.

Effect of middle-class social levels. The socioeconomic middle-class level was classified into three levels: upper-middle class, middle-middle class, and lower-middle class. These partitions were made to determine the "strength of middle-classness" on the performances in reading, arithmetic and perceptual-motor development. The main effect comparing the three levels was not significant.

Effect of preschool experience and no preschool experience. Those Ss, who received preschool training, when compared with those without preschool training, did not perform significantly different in reading, arithmetic and perceptual-motor skills.

Effect of years of preschool experience. Those Ss with preschool training were classified into three levels: 1 year, 2 years, and 3 years preschool experience. The different lengths of preschool attendance did not differ on the variables of reading, arithmetic and perceptual-motor skills.

Interactions. None of the interactions were significant.

DISCUSSION

The results of the present study indicated that socioeconomic middle-class, preschool experienced, first-graders did not perform significantly different in reading, arithmetic and perceptual-motor skills than their nonpreschool experienced social-class counterpart when compared over a five-month period of time. Sex, I.Q., length of preschool

training, and level of middle-class did not significantly differ in performance for the two groups. The results of the study strongly suggested that the preschool training for middle-class white children obtained through an enrichment oriented preschool program did not provide any advantage in basic academics (reading and arithmetic) and in perceptual-motor development when the pre-test scores and I.Q. effects were statistically controlled. In summary, the present study indicated that preschool experience did not add significant academic readiness for the social middle-class child to that readiness already obtained in the home. Of course, this finding cannot be generalized beyond the first-grade in respect to the comparison of performance between the PE and NPE groups. La Crosse, et al. (1970), have suggested a "latent" positive effect of nursery and kindergarten experience at the third-grade. Their results suggested that preschool training may have a covert effect until the third grade. However, it would appear difficult to establish that after three years, preschool training was the contributing factor in the performance difference of preschool trained children.

The findings of the present study were not without support of earlier research evidence (Borum & Livson, 1968; Crawford & Eason, 1970; Fuschillo, 1968; Gray, 1969; and Prendergast, 1969). These studies suggested that the middle-class home environment is plentiful in providing academic readiness (either directly or peripherally), verbal and language skills, competition, perceptual stimulation and a

positive attitude toward learning and school. The studies basically concluded that socioeconomic status was directly related to school achievement and that preschool experience as a factor in later school performance may be minimal for middle-class children.

Prominent and current early childhood theories encompass several concepts. First, environment plays a major role in the development of intellectual and cognitive capabilities, such as "learning to learn" (Bloom, 1964), particularly in the area of early intervention, as applied to children in the lower-class and ghetto milieus. Second, the impact of the environment may be greatest at those times when the child is experiencing his most rapid growth, that is, the first five or six years. The "optimal time thesis" or "most teachable moment" concept falls under this theoretical assumption. Early childhood, it is felt, offers the optimal time rather than the critical time to reach and assist various development growth patterns. Third, it is assumed that some types of environments are consistently more stimulating to cognitive and affective development than others. An example of this assumption would be that slum and lower-class environments contribute fewer, poorly timed or less adequate stimuli to cognitive development than middle- and upper-class environments. The results obtained in the present study do not appear to run counter to these theories. Since all children selected into the study were of middle-class status, it is assumed that home environment experiences were more similar than dissimilar. The additional influence or stimulation of an enrichment

preschool experience (in some cases up to three years) did not provide any greater advantage in academic performance (achievement) at the first-grade. The middle-class home environment appears to have provided well-timed, adequate stimuli for first-grade achievement equal to that provided through a preschool experience. It can be further inferred, in respect to the results, that preschool training provided no measurable difference in the academic achievement in reading, in arithmetic and in perceptual-motor development. However, no conclusion can be stated as to how the preschool experience effected self-concept, social skills, peer and adult relationships, attitude toward first grade or general emotional development which may or may not have effected academic performance. An examination of these factors in the affective domain was not part of the research design. Also, the results of the present study, did not suggest any conclusion as to how the dependent variables would have differed if the preschool curriculum was more instructionally and cognitively oriented.

Two other problems worthy of further investigation are suggested by the present results. The first recommendation is that other studies that examine the influence of preschool (nursery or kindergarten) with middle-class children, provide a longer pre-test, post-test interval or repeated time interval assessments. Perhaps covert or latent effects of preschool training with middle-class children require a longer interval of time to be observed as opposed to intervention-enrichment programs with Head-Start or disadvantaged children, whose preschool

experience is generally quickly noticeable (Allerhaud, 1964; Brazziel, 1967; Chesteen, 1969; and Morris & Morris, 1966). The second recommendation involves an examination of the parental motives for sending or not sending their child to preschool. When preschool attendance is voluntary and generally left up to the parents (as it was in this study), attitudes of the parents toward preschool education or learning in general, may have some unknown effect on school achievement.

REFERENCES

- Allerhand, M. E. Impact of Summer 1965 Head Start on Children's Concept Attainment During Kindergarten. ERIC Accession Number: EDO15773, Cleveland: Western Reserve University, 1965, 100 pp.
- Bancroft, T. A. Topics in Intermediate Statistical Methods, Vol. 1, Ames: The Iowa State University Press, 1968.
- Bereiter, C., and Englemann, S. Teaching Disadvantaged Children in the Preschool. New Jersey: Prentice-Hall, Inc., 1966.
- Bloom, B. Stability and Change in Human Characteristics. New York: John Wiley, 1964.
- Borum, Elizabeth, and Livson, N. Mental Test Score Changes at Kindergarten Entry. The Journal of Experimental Education, V. 34, N. 1, Fall, 1965, pp. 89-92.
- Brazziel, W. F. Two Years of Head Start. Phi Delta Kappan, 48: March, 1967, pp. 344-48.
- Butler, Annie L. Current Research in Early Childhood Education: A Compilation and Analysis for Program Planners. Washington, D. C.: NEA Center, 1970.
- Chesteen, H. E. Effectiveness of the Head Start Program in Enhancing School Readiness of Culturally Deprived. ERIC Accession Number: EDO20771, East Baton Rouge, La.: Community Advancement, Inc., 1966, 170 pp.
- Coleman, J. S., et al. Equality of Educational Opportunity. U. S. Government Printing Office, Document Catalog No. FS 5.238:38001, Washington, 1966.
- Crawford, Patricia, and Eason, G. School Achievement: A Look at the Effects of the Home. Ontario: Toronto Board of Education, Research Dept., Jan., 1970, ERIC Accession Number: EDO47777.
- Davis, Allison. Social Class Influences Upon Learning. Cambridge: Harvard University Press, 1948.

- Deutsch, M. "The Disadvantaged Child and the Learning Process," in A. H. Passow (ed.), Education in Depressed Areas. New York: Teachers College Press, Columbia University, 1963.
- Dunn, L. M. Peabody Picture Vocabulary Test. Beverly Hills, California: Western Psychological Services, 1965.
- Elkind, D. Preschool Education: Enrichment or Instruction? Childhood Education, 45, February, 1969, pp. 321-28.
- Faustman, M. N. Some Effects of Perception Training in Kindergarten on First Grade Success in Reading. Paper presented at the International Reading Association Conference, Seattle, May 4-6, 1967.
- Fuller, Elizabeth M. Values in Early Childhood Education. Washington, D. C.: National Education Association (NEA), 1960, 72 pp.
- Fuschillo, Jean E. Enriching the Preschool Experience of Children from Age Three: The Evaluation. Children: 15, July-August, 1968, pp. 140-43.
- Giammatted, M. C. Socioeconomic Status and School Achievement. ERIC Accession Number: EDO30163, Northwest Regional Educational Lab., Portland, Ore., 1967, 15 pp.
- Gray, Susan W. Selected Longitudinal Studies of Compensatory Education—A Look from the Inside. ERIC Accession Number: EDO33762, George Peabody College, 1969, 13 pp.
- Havighurst, R. J. Characteristics of the Disadvantaged. Journal of Negro Education, 1964.
- Halliwell, J. W. A Comparison of the Achievement of Early and Late Starters in Reading Related and Non-Reading Related Areas in Fourth and Fifth Grades. Elementary English, October, 1964, pp. 631-39.
- Hampleman, R. S. A Study of the Comparative Reading Achievements of Early and Late School Starters. Elementary English, May, 1959, pp. 331-34.
- Jastak, J. R., and Jastak, S. R. The Wide Range Achievement Test: Manual. Wilmington, Delaware: Guidance Associates, 1965.
- Karnes, Merle B. A Research Program to Determine the Effects of Various Preschool Intervention Programs on the Development of Disadvantaged Children and the Strategic Age for Such Intervention. Urbana, Illinois: University of Illinois, 1968, ERIC Accession Number: EDO17319.

- Keister, B. U. Reading Skills Acquired by Five-Year-Old Children, Elementary School Journal, April, 1941, pp. 587-96.
- Keogh, Barona, and Smith, Carol. Visual-Motor Ability for School Prediction: A Seven-Year Study. Perceptual and Motor Skills, V. 25, 1967, pp. 101-110.
- King, I. B. Effect of Age of Entrance into Grade 1 upon Achievement in Elementary School. Elementary School Journal, February, 1955, pp. 331-36.
- Koppitz, Elizabeth M. The Bender Gestalt Test for Young Children. New York: Grune & Stratten, 1964.
- LaCrosse, Jr., E. R., et al. The First Six Years of Life: A Report on Current Research and Educational Practice. Genetic Psychology Monographs, 82, 1970, pp. 161-266.
- Mayer, M. The Good Slum Schools. Harpers, 22 (April, 1961), pp. 46-52.
- Morris, Berniece, and Morris, G. L. Evaluation of Changes Occurring in Children Who Participated in Project Head Start. ERIC Accession Number: ED017316, George L. Kearney State College, 1966, 122 pp.
- Neighbours, O. J. Retardation in the Schools and Some of the Causes. Elementary School Teacher, 1910, pp. 119-135.
- Osborn, D. K. Some Gains from the Head Start Experience. Childhood Education, 44, September, 1967, pp. 8-11.
- Prendergast, R. Pre-reading Skills Developed in Montessori and Conventional Nursery Schools. Elementary School Journal, 70, 1969, pp. 135-41.
- Seifert, K. Comparison of Verbal Interaction in Two Preschool Programs. Young Children, 24: Sept., 1969, pp. 350-55.
- Van Denburg, J. K. Causes of Elimination in the Public Secondary School of New York City. Teacher College Press, Columbia University, 1941.
- Warner, W. L., Meeker, Marchia, and Eells, K. Social Class in America: A Manual of Procedure for the Measurement of Social Status. Massachusetts: Science Research Associates, Inc., 1957.
- Weber, Evelyn. The Kindergarten: Its Encounter with Educational Thought in America. New York: Teachers College Press, 1969.

Wolff, M., and Stein, Annie. Head Start Six Months Later. Phi Delta Kappan, 48, March, 1967, pp. 349-50.

APPENDIX A

PROSPECTUS

PRESCHOOL EDUCATION AS A FACTOR IN
FIRST-GRADE PERFORMANCE OF
MIDDLE-CLASS CHILDREN

INTRODUCTION

Many American educators, laymen and parents seemingly agree that preschool educational programs provide effective education for young children. It is estimated that forty percent of all 3- to 5-year-olds in the United States are enrolled in some form of early childhood education program (Weber, 1969). Preschool education is currently expanding to a level that possibly makes it the most significant educational trend of the 1970's (Butler, 1970). While there appears to be significant acceptance of preschool education, the concept of early childhood education is perceived in different ways. Professional educators are divided as to what an early education program should provide the preschooler. Divisions exist between the advocates of play and the proponents of work or academically oriented curriculums, and between those who see the function of the preschool as socialization and those who view it as a means for developing intellectual and academic abilities. New curriculum programs are being developed and the effects on young children are being measured. Each innovative preschool program appears to add new controversy to the

early childhood education movement. The Head Start program, in its attempts to provide enrichment intervention to the disadvantaged child, has created as much controversy as it has resolved. Head Start programs are being repeatedly challenged (Allerhand, 1965; Bereiter & Englemann, 1966; Chesteen, 1966; Deutsch, 1963; Frost & Hawks, 1970; Gray, 1969; Karnes, 1968; Margolin, 1969; Meyerson, 1967; Morris & Morris, 1966; Osborn, 1967; Rohwer, 1970; and Zigler & Butterfield, 1968). Whether the preschool program is designed to meet the needs of the culturally privileged or the disadvantaged, the early childhood movement in this country is characterized by confusion, conflict, and a multitude of theoretical issues with modicum evidence of effective application (Butler, 1970; Weber, 1969).

The preschool program designed for the culturally privileged or the socioeconomic middle-class has not received the same research interest as have the programs for the culturally disadvantaged (Bereiter & Englemann, 1966; Butler, 1970; Weber, 1969). It has been suggested in several studies (Barum & Livson, 1965; Crawford & Eason, 1970; Fuschillo, 1968; Gray, 1969; Prendergast, 1969) that preschool experience may not add significant academic readiness for middle-class children to that readiness already obtained in the home.

The intent of this study is to measure the effectiveness of a middle-class preschool program on first-grade performance of middle-class children. Two groups of children, those with preschool experience and those without preschool training, will represent the independent variables of the study. The children's academic achievement

(reading, arithmetic) and perceptual-motor development will be measured as they progress through a five-month period of first-grade attendance. Reading, arithmetic, and perceptual-motor development represent the dependent variables. The subject variables of sex, I.Q., length of preschool attendance, and levels of middle-class (lower-middle, middle-middle, upper-middle) will also be studied in order to determine their effects on the dependent variables at the pre- and post-test conditions.

REVIEW OF THE LITERATURE

Historical outline of early childhood education. The practice of early childhood education is by no means new and revolutionary. Friedrich Frobel began his kindergarten in Blankenburg, Germany, in 1837 (Weber, 1969). America began early childhood programs in 1873 when William T. Harris started the first kindergarten program in St. Louis, Missouri, and Abigail Elliot began the first nursery school program in Boston, Massachusetts, during 1921 (Thompson, 1951). The initial concern of preschool education was primarily with the physical health and welfare of the child. Arnold Gesell, perhaps the most famous advocate of preschool education, was in essential agreement with these objectives, as can be seen in his earlier writings (Gesell, 1923). Due to the limited objectives of preschool education at this time, it was felt that one kind of preschool program could be equally effective for all kinds of children regardless of their backgrounds of experience. From 1921 to the early 1940's, in terms of preschool education, the early childhood program was basically aimed at the

underprivileged sectors of society. During this period, participation in a preschool program by middle-class youngsters was rare (Butler, 1970). Later in the 1940's, a shift in social class orientation occurred and preschool education programs became an increasingly middle-class institution (Butler, 1970; Weber, 1969). With this shift in class orientation, the goals of early childhood education also shifted, and the preschool became only secondarily interested in the physical welfare of children and principally committed to cognitively orientated approaches (Berson, 1968; Butler, 1970). Today the middle-class value system continues to dominate the preschool program.

The summer of 1965 marked the beginning of another new era for early childhood education (Butler, 1970; Weber, 1969). Federal Head Start programs were developed in an attempt to meet the needs of disadvantaged children in the three to six age groups. Berson reports that the Head Start program philosophy stressed the fact that about one out of five children in the United States experienced significant physical, social, sensory, and cultural deprivation (Berson, 1968). Curriculum reconstruction was again necessary in attempting to meet the needs of the culturally disadvantaged because the middle-class value system had dominated the kindergarten scene for approximately thirty years.

Curriculum philosophies of early childhood education. The preceding discussion indicated that social class orientation played a key role in curriculum development in preschool education. The curriculum and goals of early childhood education varied with general social-class

characteristics of the young child. The changes in curriculum orientation to meet the needs of the preschool child of differing social classes, has reopened the controversy over what the preschool program should offer the young child. Elkind (1969) believes that a battle exists between the "traditional middle-class nursery school teachers who see preschool education as development within, and the new breed of preschool workers who see education as enforcement from without (Elkind, 1969, p. 322)." Elkind designates one of these orientations as enrichment and the other as instruction. He describes a conflict between those who advocate enrichment for middle-class children and those who advocate instruction for lower-class children. The enrichment position holds that readiness is a phenomenon determined by the child's own rate of development, that academic pressure adds burdensome pressures upon the child, and that one of the prime aims of preschool education is to foster self-expression and creativity. The instruction position holds that early stimulation results in superior academic achievement without negative personality or social effects. The instruction position further maintains that we have underestimated the abilities of our children, who can learn faster than we now have them learning. Under the instructional viewpoint, it is believed that the young child's intellectual ability is more appropriately utilized.

Margolin (1969) disagrees with the assertion that one curriculum position is "better" than another. She states, "an erroneous impression that a division exists between intellectual (or cognitive) pursuits and exploratory play behavior, that one has 'mind-making'

properties and the other does not because the latter is less systematically presented (Margolin, 1969, p. 504)."

Weber (1969) states that "new programs for children of slum areas are being developed, not for 'building character', nor for 'fostering social and emotional adjustment', but rather as a means of providing a 'cognitive tooling up' to prepare children for subsequent school experiences. Throughout the country questions are raised about the effectiveness of early childhood education for children who live in an increasingly complex and technological society. Impatient parents, anxious for their children to begin reading and writing early, exert pressure for formalized academic approaches (Weber, 1969, p. 204)." Stated differently, many persons, parents, and professional educators have found the "blocks, paint and clay curriculum" lacking in intellectual and academic content.

Cognitive development in the child may be viewed two ways. Schermann (1968) describes one program in cognitive development emphasizing the teaching of specific learning such as recognition of letters, words, numbers, and shapes, and the development of specific concepts such as big, bigger, biggest or over, under, on. Much emphasis is placed on classification based on different attributes of a wide variety of objects. Some programs do not state any goals outside the cognitive areas, assuming that success in the cognitive domain is the prime prerequisite to development in all areas. Schermann describes at the opposite end of the scale, programs which emphasize the development of skills in every aspect of the child's growth. Goals that relate to

the aspect of the child's social, emotional, physical, and intellectual development are specifically stated. Affective learnings are regarded with as much significance as cognitive learnings, and the two are closely interwoven in curriculum planning. Cognitive learnings are less clearly or less narrowly defined. Children are expected to learn from their interaction with each other and from their experimentation with a wide variety of materials that also introduce possibilities not purely in the cognitive domain.

One outgrowth of the emphasis on disadvantaged children has been the push toward giving greater importance to getting children ready for school or more specifically, ready for the first grade. This point of view attaches great significance to early school achievement. It calls for an analysis of the skills and abilities a child needs to be successful in first grade and for a plan to teach those skills before he goes to school. This point of view accepts the premise that children should reach a certain degree of accomplishment before moving to the next step. In such a program, a child who does not do well on the reading readiness test may be retained in kindergarten.

As was pointed out earlier in this paper, prior to 1940, the preschool programs were entrenched in cultural intervention, which had been devised as an enrichment program for the disadvantaged. The middle-class child received minimal benefit from participation (Bereiter & Englemann, 1966). Attempts have been made over the years in curriculum reconstruction, to develop a middle-class preschool for middle-class children. Curriculum planners, having examined the

middle-class value system—the crucial factors of verbalism, parental stimulation and control, competition, achievement motivation, perfectionism, and orientation to the future—have tried to saturate the preschool program with this climate in hopes that it would foster higher order early childhood development for middle-class youngsters. A confusion in educational practice has existed over the social orientation of the preschool curriculum. Should we design preschool programs for children contingent on their early home experiences and make the preschool experience a continuance of those experiences, or should we offer contrasting experience in preschool? Bereiter and Englemann (1966) have observed obvious contrasts between the traditional preschool environment and what is generally conceived as the typical middle-class home environment:

1. Whereas the middle-class child often spends most of his time at home with adults and has fewer than the average number of playmates of his own age, the preschool stresses peer-group relationships and a reduced amount of adult-child interaction.
2. Whereas the home environment is especially rich in verbal experience, the preschool stresses seeing and doing.
3. Whereas the child at home is subject to many prohibitions, the preschool encourages, within limits, greater freedom and independence.
4. Whereas the child at home is sometimes prevented from developing physical skills and courage by overly protective parents, the preschool attempts, through greater permissiveness and more carefully designed play equipment, to engage the child in more active and venturesome physical activities.
5. Whereas the child's parents may discourage messy activities, the preschool gives the child the opportunity to play with clay, sand, water, finger paints, etc.

6. Whereas the child's parents may demand high levels of achievement, the preschool allows the child to set his own standards.
7. Whereas the home environment is future-oriented, the preschool stresses enjoyment of the present.
8. Whereas the home environment fosters competitiveness, the preschool fosters cooperation and discourages comparisons of one child's performance with that of another.
9. Whereas at home the flow of information tends to be from the parents to the children, in the preschool the flow is from the children to one another and to the teacher.
10. Whereas the home environment is highly reality-oriented, the preschool encourages fantasy and dramatic play (Bereiter & Englemann, 1966, p. 17).

However, as Bereiter and Englemann contend, in attempting to offset or contrast the middle-class environment, by offering a different experience, the preschool has taken on many of the characteristics of the lower-class home environment. If instead of offering a different experience for middle-class children, preschools are developed in tune with the middle-class structure, then we have to ask the question whether the preschool program will influence the privileged child or only duplicate his home experience. Research questions addressed to the dilemma that exists between characteristics of the middle-class home and the middle-class oriented preschool are yet unanswered.

The early childhood research literature is replete with studies dealing with the cultural disadvantaged. Bereiter and Englemann summarized nicely five main points generally examined by early childhood research with the disadvantaged.

1. By the age of three or four, disadvantaged children are already seriously behind other children in the development of aptitudes necessary for success in school.

2. Disadvantaged children must somehow 'catch up' in the development of these abilities, or they will enter elementary school with handicaps that will spell failure for a large percentage of them and a limited future for all of them.
3. If they are to catch up, they must progress at a faster than normal rate.
4. A preschool program that provides the usual opportunities for learning cannot be expected to produce learning at above normal rates.
5. A short-term preschool program cannot be expected to produce above normal gains in all areas of development at once; a 'well-rounded' program is therefore incompatible with the goal of catching up: selectivity is necessary (Bereiter & Englemann, 1966, p. 19).

Taken together, these points indicate that radical departures from established practices of early childhood education are needed. A preschool program without stated philosophies and goals appears to encourage an amorphous curriculum. However, a well planned curriculum often limits the social orientation of its young students. It has been demonstrated that preschools for disadvantaged children that are patterned after the familiar middle-class preschool have not succeeded in meeting the challenge of providing a faster than normal rate of learning in areas significant for school success (Bereiter & Englemann, 1966; Fuller, 1960; Karnes, 1968; Kohlwes, 1966; Weber, 1969; Zigler, 1968).

Theoretical assumptions in early childhood education. While the preschool or early childhood education literature is replete with studies that acclaim the need and effectiveness of its programs, the theoretical assumptions that form the foundation of the various

programs are meager. There are, however, basic theoretical positions that are generally presented as fundamental to early childhood education.

One of the major controversies in early childhood education has been concerned with determining the relative contribution of heredity and environment to intelligence. Benjamin Bloom (1964) emphasized the importance of the early years for intellectual development and the significance of environment appears to be greatest in the early periods of intellectual growth, that is, the first five years of life. Bloom further hypothesizes that nursery school and kindergarten can profoundly affect the child's general learning pattern. His proposition that the early years are potent for intellectual growth is at variance with the tradition which puts faith in maturation theory. Bloom (1964) has pointed out three reasons why the early environment is of crucial importance:

1. The rapid growth of selected characteristics makes the variations in the early environment so important because they shape these characteristics in their most rapid period of formation.
2. Development in the early years provides the base year on which later development depends.
3. It is much easier to learn something new than it is to stamp out one set of learned behaviors and replace them by a new set (Bloom, 1964, p. 54).

Jerome Bruner (1961) insists that a small child's ability to learn has long been underestimated. In his book, The Process of Education, he introduced what has now become a maxim of early

childhood education. "Any subject can be taught effectively in some intellectually honest way to any child at any stage of development (Bruner, 1961, p. 33)." J. McV. Hunt (1961) discusses in his book, Intelligence and Experience, not only that the assumption of fixed intelligence is no longer tenable, but that the general notion which considers behavioral development to be an automatic aspect of anatomic maturation is also erroneous.

Jerome Kagan (1973) in reporting research on cognitive development of young children, basically agrees with Bloom, Bruner, and Hunt that the first few years of the life are not exorable determinants of future behavior. His recent studies are in direct contrast to Freud and Piaget's deterministic approach to child development and behavior. In a fifteen-year study of infants and young children in regard to recall and recognition memory, perceptual analysis, and perceptual and conceptual inferences, Kagan concluded that "the first two years of life do not seem to be good predictors of future function in all environments (Kagan, 1973, p. 1)."

Much of the research conducted on early childhood education has espoused stages in cognitive development and have used it as theoretical for program direction. Jean Piaget (1950) seems to offer the most logical basis for formulating enrichment programs and it appears that a large percent of preschool programs attempt to apply Piaget's theories. Piaget's investigations have strongly influenced educators in the early childhood field. Due to his influence, there has been the recognition that:

1. Sensorimotor experience is important for learning.
2. Language, especially that which relates to labeling, categorizing, and expressing, is intimately related to developing greater facility in thinking.
3. New experiences are more readily assimilated when built on the familiar.
4. Accelerated learning of abstract concepts without sufficient direct experience may result in symbols without meaning.

To a great extent the "environmentalists" and those who espouse levels or stages of cognitive development have dominated the early childhood education movement in this country. However, Jensen (1969) and Zigler (1968) have cautioned us against "unbridled environmentalists." They feel that our nation has more to fear from them than from those who take the biological integrity of the organism seriously. They point out that environmentalists have written report after report in which genetics is ignored and the concept of capacity is viewed with minimal interest. In the educational realm, Jensen states that environmentalists have suggested to parents how easy it is to raise the child's I.Q. and achievement scores and have led many to believe that the retarded could be made normal and the normal be made geniuses.

The work of Arnold Gesell (1946) has also influenced early childhood education. Gesell presented the preschool movement with normative data. He describes innate processes of growth called maturation, in the form of growth gradients. In Gesell's maturational theory, the child is not viewed as an amorphous bit of behavior to be shaped, but as an individual depending on inner regulation in the growth process. To Gesell and the neo-Gesellians, inner regulation meant more

reliance upon innate growth and less emphasis upon environmental stimuli. Gesell's work gave support to the assumption of fixed intelligence. It is interesting to note that Gesell's population of children studied from nursery school were of high average or superior intelligence and came from homes of high socioeconomic status. The normative data offered by Gesell was and is often used, as if it would apply to children from all socioeconomic statuses.

In summary, the concept of fixed intelligence is being contested among early childhood planners. There is a change from the "unfolding" or maturation schedules to the process or concept of environmental interaction. A major reversal in psychology and early childhood education from a notion that intelligence, achievement, and learning potential are fixed to the idea that we can do something about a child's early learning experience by the nature of the richness of his environmental interactions, is prevalent today. The prominent, current early childhood theory encompasses several concepts. First, environment plays a major role in the development of cognitive skills and of the functional use of intellectual capabilities, such as learning how to learn, leading to "early intervention," particularly as applied to children in the lower-class and ghetto milieus. Second, the impact of different aspects of the environment is different for different functions at different times, that is, environmental influences may be greatest at those times when the organism is experiencing their most rapid growth. The "optimal time thesis" or "most teachable moment" concept falls under this theoretical assumption. Early childhood, it

is felt, offers the optimal time rather than the "critical time" to reach and assist various developmental growth (cognitive and affective levels) patterns. Third, it is assumed that some types of environments are consistently more stimulating to cognitive development than others. An example of this assumption would be the slum and lower-class environment contributing fewer or less well-timed or less adequate stimuli to cognitive development than middle- and upper-class environments. Preschool education programs would hopefully provide a consistent and more stimulating environment to the young child, than what he would receive in his home milieu. Lastly, a major theoretical position generally found in the traditional preschool program is that some kinds of skills or abilities are basic to others (Deutsch & Deutsch, 1968). That is, one needs assistance in progressing from basic skills to specific skills. Preschool programs attempt to provide the basic skills upon which more specific skills can be built. An example of this philosophy would be that visual discrimination must develop before reading can be acquired.

The following sections of the literature review describe the relationship of early childhood educational training to (1) intellectual change, (2) achievement progress, (3) perceptual-motor development, (4) sex differences, and (5) socioeconomic status. These categories represent some of the major criteria examined by researchers in the early childhood education area.

Intellectual change. One of the concerns in early childhood education, beginning in the 1920's, has been with finding ways to help the individual attain an intellectual level higher than that which he could have attained without those particular experiences. Goetch (1926), Hildreth (1928), Karvin & Hooper (1931), McHugh (1943), Page (1940), and Wellman (1943) were among the early researchers who attempted to show that early entrance into a preschool program was a factor in the significant increase in I.Q. level of young students. These outdated but often reported and quoted studies, are consistent in stating positive change in I.Q. change. Goetch's findings indicated that pupils who had kindergarten training prior to first grade entrance made higher scores on certain mental tests than those without kindergarten training. Wellman reported an average I.Q. gain of 6.6 points as a result of one year of preschool training. Hildreth in a comparison study of 41 pupils entering first grade with at least four months of nursery or kindergarten experience, with 48 pupils of comparable socioeconomic status without such experience, found an advantage of 6 points in favor of the preschool experience group. However, this advantage disappears as soon as the two groups had a year and a half of subsequent schooling. In McHugh's study, he presented evidence that children make significant mean gains in I.Q. score as a result of a short period of preschool experience. Socioeconomic and educational status of the parents and home ratings were not found to be significantly related to the gains. However, in McHugh's study, the mean interval between testings (pre- and post-test conditions) was only 1.93

months, that is, with approximately two months of preschool experience. Since the significant gains in I.Q. occurred so rapidly, it is unlikely that they resulted from growth in intellectual capacity. It is more probable that the gains in I.Q. are due to adjustment to the testing situation.

Wellman (1946) and Fuller (1960) summarize these earlier studies in their attempt to measure intellectual change. They point out that these early studies on cognitive change indicate cumulative gains in I.Q. during the first two years of preschool attendance with no gain among non-preschool children. Correlations between the change in I.Q. and the number of days attendance during one preschool year approach zero. Changes in I.Q. could not be accounted for by the cultural status of the parents. The gains in I.Q. which are attributed to preschool attendance appeared to be reflected in school achievement.

There is, however, considerable disagreement as to the effect of duration of preschool attendance upon the amount of I.Q. gain. Most studies, as summarized by La Crosse, et al. (1970) reflect an initial gain of I.Q. in first grade (as a result of preschool attendance), loss of the gain in the second grade, and a reappearance of the gain in the third grade. There is as yet no explanation for the second-year dip and the third-year recovery. The data suggest that preschool experience may increase, decrease, or have no effect upon the intelligence quotient. The above statement is exemplified best by Goodenough and Maurer's (1940) criticism of the early studies in I.Q. change by their extensive study of a total of 407 preschool children. Most of the

earlier studies used much smaller samples. Goodenough and Maurer compared the test records of 147 children who attended nursery school with 260 children who had no nursery school experience. None of the comparisons made between the two groups indicated an accelerated effect upon the intelligence of the children who attended preschool. Those with preschool training were not more advanced in first grade than those who did not attend nursery school.

The early studies on the relationship of preschool experience and I.Q. change initiated interest that continues to this current time. This interest, whether it is superficial or meaningful, seems to lie at the core of whether early childhood education will be accepted by the public and by school authorities.

Again, in the 1960's, researchers began to be concerned with the effect of nursery school and kindergarten on intellectual development. However, the focus for the following studies are different than those conducted from the 1920 to 1940 period. Programs are now being planned to develop specific cognitive abilities, and research was conducted to see if such abilities were indeed being developed. Nationwide concern with the problems of disadvantaged children has led to the establishment of educational programs for children of low socioeconomic status where few had existed before.

Very few studies have been conducted on intellectual changes as a result of preschool experience of middle-class children since the early studies. Borum & Livson (1965) found only a negligible change in mental test scores due to preschool experience with middle-class

children. However, studies dealing with lower socioeconomic and culturally disadvantaged children have indicated as high as 15 to 20 points increases in I.Q. as a result of intervention preschool programs. The impact of Head Start has been significant in influencing the early childhood movement, not only for the socially and culturally disadvantaged but for all children. The last seven years have been marked by a great upsurge in interest in the effect of educational programs on the young child's cognitive abilities. Most of the research planned specifically as intervention studies has placed a high priority on cognitive development and has, therefore, relied heavily, again, on the results of the I.Q. test in evaluating the programs. About two-thirds of the studies on file in the Office of Economic Opportunity report a significant increase in I.Q. or a superiority for children with Head Start experience over children with similar social and economic backgrounds but with no Head Start experience as summarized by Brazziel (1967) and Osborn (1967).

Early childhood educators have often expressed preferences for particular approaches to teaching young children, but little research has made a comparison of the children in the different programs. Seifert (1969) reports a study comparing a cognitive structured preschool curriculum and a language structural curriculum. The results showed that the two preschool programs differed little in terms of Stanford-Binet I.Q. gains, but culturally disadvantaged children in both of these programs gained about 30 I.Q. points more than the control group of non-preschool children.

Karnes (1968, 1966), in attempting to measure intelligence and achievement change by comparing the results of different preschool curriculum programs, found significant differences. The Bereiter-Englemann program, the Karnes preschool program, and a traditional preschool program were offered to three matched groups of culturally-deprived youngsters. The Karnes and the Bereiter-Englemann programs were highly structured academic programs. The curriculums are designed to develop the basic language processes as well as to teach specific content in the areas of mathematics, language arts, social studies, and science. Both programs (Karnes & Bereiter-Englemann) are intended to accelerate development in areas which will enable the preschool child to cope more successfully with later school tasks. The two programs differ in the respect that the Bereiter-Englemann program relies on direct verbal instruction as the primary teaching strategy. The Karnes program utilizes verbal instruction, but incorporates other instruction strategies such as performance tasks, imitation, incidental learning, etc. The traditional preschool program had as its goal a program to foster acquisition of social skills. Teachers in the traditional program offered opportunities for incidental learning (instruction) but without the use of a structured curriculum. Results indicated that the Bereiter-Englemann and Karnes programs were superior to the traditional program in I.Q. gain and academic achievement for culturally deprived youngsters.

Even with impressive gains made in I.Q. as that reported above (Seifert, 1969), further studies indicated that culturally

disadvantaged Head Start children still have a long way to go to catch up with middle-class children of their age. Fuschillo (1968) concluded that children from the most deprived homes may need at least a two-year preschool experience to get the full benefit of a preschool program, while those from less economically depressed and better organized families may need less. Similar conclusions are made by Gray (1969) whose data suggested that earlier and longer exposure to the preschool program resulted in the most improvement of 61 Negro children in a five-year study of intervention preschool training. Four groups were used, each group experiencing various lengths of preschool training.

In summary, there is evidence to show that if intellectual training is begun soon enough, before age three, social class does not influence the child performance significantly. However, most studies have confirmed the difference in the initial test scores of middle-class and disadvantaged children. The general body of research on I.Q. change appears to be a significant factor only when dealing with disadvantaged children. Preschool experience appears to provide only negligible intellectual gain for middle-class or advantaged children (Seifert, 1969; Borum & Livson, 1965).

Achievement (academic) progress. Another question often addressed to early childhood educators related to whether children who attend preschool, achieve better in school than those children who do not. Whether they do better (achievement) in first or second grade is usually asked, along with the earlier research question, that is, I.Q.

change. This question is one most often asked by middle-class parents of the writer. This question gets directly to the heart of the controversy in early childhood education because some programs are specifically focused on teaching children skills directly related to the learning of basic reading and arithmetic, while others are focused on more extensive goals. Both types are concerned, however, with providing the child with better preparation for his early school years.

Fuller (1960) in her review of the values in early childhood education, states that of seventeen studies (since the early 1920's) that dealt with the question of the relation of preschool experience to later school achievement, fourteen studies related positive values of early childhood education, while three found no positive value. Most of these studies were conducted prior to 1950 and shed little light on current preschool curriculum and philosophical changes. Fast (1957) in a somewhat more recent study, found that kindergarten children excelled in all areas of the Metropolitan Achievement Test—word picture, word recognition, word meaning, numbers, and reading over non-preschool children.

Much of the work in achievement readiness has been done in the area of culturally and economically deprived because these children lack the background with which middle- or upper-class children begin their formal education (first grade). Studies on Head Start progress have provided a rich source of research data. Several writers (e.g., Allerhaud, 1964; Chesteen, 1966; Morris and Morris, 1966; and Wolff and Stein, 1967) found consistent evidence concerning the positive impact

on academic readiness and achievement of a Head Start program, but the evidence is also very contradictory concerning the duration or long range impact on the "gain." These writers indicate that some loss of the benefit from Head Start occurs and they (Head Start children) level off to a plateau which allows other children (non-Head Start children) to catch up with them.

A study of the impact of Head Start, conducted from June, 1968, through May, 1969, by the Westinghouse Learning Corporation and Ohio University (Frost and Hawkes, 1970), attempted to identify the extent to which the children now in the first, second, and third grades who attended Head Start programs from comparable children who did not attend Head Start. Summer programs appeared to be ineffective in producing any gains in cognitive and effective development that persists into the early grades. Full-year programs appeared to be ineffective as measured by tests of affective development but were marginally effective in producing gains in cognitive and achievement areas in the early grades. Head Start children still appeared to be considerably below national norms for the standardized tests of scholastic achievement.

Prendergast's (1969) study, compared the development of pre-reading skills in three groups of upper-middle-class children; a conventional day nursery class, a Montessori preschool class, and a non-nursery school group. The conventional school offered common enrichment experience, while the Montessori class provided a structural program to develop skills through the use of special methods and

materials. At the end of seven months, children were compared on development of perceptual-motor skills and receptive language. In most areas evaluated, no significant differences were found among the three groups. The researcher attributed this primarily to the fact that the upper-middle-class environment encouraged the development of reading readiness skills without nursery school experience.

While the majority of the studies reviewed report positive readiness benefits of preschool attendance, there is research evidence that does not support the majority view in early childhood education philosophy. King (1955) reports on a study of two groups totaling 54 children who were 5 years and 8 months to 5 years and 11 months old when they started school. They were compared with 50 children who started at 6 years and 3 months to 6 years and 8 months of age. Stanford Achievement Tests at the end of grade six showed a distinct difference, strongly in favor of the older group. In this study, of the 11 children who were retained, only one had started after six years of age; 19 boys and 16 girls of the younger group appear to be maladjusted in some way; while only 3 boys and 3 girls from the older group were considered maladjusted. The question then is not only, "Is the child ready for school?" but even more important, "Does he demonstrate his readiness by sufficient maturity to sustain learning?" The American Educational Research Association (1952) matched two groups of children as to sex, age, intelligence, and home conditions. One group began reading at the age of six, the other at the age of seven. In two years, the late-beginning group had

caught up with the early beginners. After the first two years, these two groups were joined in classes. At the end of their seventh year, the children who began a year late were one year ahead of the early beginners. Keister (1941) reported that five-year-olds could often develop enough skills to get through first-grade reading, but the learning was generally not retained through the summer vacation. Halliwell (1964) and Hampleman (1959) report similar results to King's 1955 study, that later entrants significantly excelled those who started schooling earlier.

The studies dealing with achievement gain or loss, as was found with I.Q. change, are conflicting, confounded, and inconclusive. In summary, while there is evidence which indicated that early-starters in formal school (first grade) demonstrate a slight advantage in readiness over the late-starters, the early-starter is unable to sustain this advantage. The later-starter shortly matches the early-starter in readiness and performance in academics.

The research presented on achievement change or gain as a result of preschool experience is lacking in assessing the effects on middle-class children. There is strong evidence that preschool experience may not significantly benefit the middle-class child when compared to his social-class counterpart without preschool experience (Crawford & Eason, 1970; Fuschillo, 1968; Gray, 1969; Halliwell, 1964; Hampleman, 1959; and Pendergast, 1969).

Perceptual-motor development. There has been minimal interest

in assessing the effect of preschool experience on perceptual-motor skills readiness by proponents of preschool education. Extensive research and clinical analyses have found that school tasks such as reading, writing, and arithmetic depend upon motor skills which are subject to the same laws of growth which govern creeping and walking. However, some research (Homer, et al., 1970; Strong, 1964) supports that four- to five-year-olds don't have the perceptual-motor skills demanded of them by preschool programs. Many neurophysiological studies demonstrate significant changes in brain patterns which occur between ages seven and eleven. These studies include impressive experiments which lead one to question if children should be required to participate in regular classroom instruction until they are at least eight years old (Fisher & Hawley, 1951; Rohwer, 1970). Keim (1970) attempted to determine the effects of a visual-motor training program in the readiness and intelligence of kindergarten children. Three groups of children matched on the basis of intelligence and pre-kindergarten readiness were selected for the study. The experimental group followed prescribed visual-motor training procedures while the control group was given the traditional kindergarten program. The groups were compared for intelligence and readiness at the end of the year. The results showed no significant difference and suggest that further research is necessary before visual-motor training programs become a part of the general kindergarten curriculum. However, a study performed by Keogh and Smith (1967) found that perceptual-motor training is beneficial at kindergarten and is a good and useful predictor of

educational achievement in subsequent school grades. Visual-motor performance data were gathered on 73 children at kindergarten, grades 3 and 6, and the results indicated that these skills (visual-motor) demonstrated in kindergarten were surprisingly indicative of future educational achievement to the sixth grade. Visual-motor performance was measured by the Bender-Gestalt technique and school achievement by standard achievement tests. Prendergast's (1969) study (noted earlier in this paper) found no difference in the development of perceptual motor skills between a conventional or traditional preschool program (common enrichment experiences), a Montessori preschool (structured with special curricular), and a non-preschool group.

There has been no comprehensive study that has investigated the comparable development of visual-motor skills through a preschool experience and those visual-motor skills of middle-class children with no preschool experience. Perceptual-motor development has been currently cited in literature as a necessary prerequisite to adequate reading and learning experiences. Perhaps, more concern needs to be given to preschool programs in terms of curriculum that stresses perceptual-motor skills development, after assessing to what degree the home environment already stimulates that development.

Solan (1968) believes that perceptual-motor development level of children should be measured and obtained in order that professional educators are better able to respond to his academic needs. Solan points out that as a child matures from infancy to early childhood, a shift occurs in his sensory hierarchy from tactile to auditory to

visual. This transition takes place in about grades four and five. This, of course, is well after preschool age. Perhaps this is why, in the limited research on perceptual-motor development studies in early childhood, the results are inconsistent and meager. However, one outstanding piece of current research indicated that perceptual-motor training introduced at the preschool age is significant to success at the primary grades. Faustman's (1967) study of kindergarten perception was made to determine if a normal program in perception training in kindergarten would contribute to the growth of perception in children at the end of the kindergarten year and to success at the first-grade level. Fourteen kindergarten classes were chosen at random for a control group, and 14 classes were chosen at random for an experimental group. The children, from a large school district in northern California, were randomly assigned to all classes. Each subject was given the Winterhaven Perception Ability Forms Test in September and May of the kindergarten year to determine growth in perception and was tested with the Gates Word Recognition Test in November and May of the first grade to determine growth in reading ability. Teachers were chosen at random for the classes and were matched on years of experience and teaching competence. Each of the kindergarten control and experimental group teachers received inservice training on the use of kindergarten guides from both county and district. The experimental group of teachers received additional training in teaching perception skills. Data indicated significantly greater growth in the experimental group in

both perception and word recognition achievement when compared to the control group.

The value of perceptual-motor training offered in preschool programs may or may not be helpful to all children. To the same degree, as was indicated in the research on I.Q. and achievement gain, the socioeconomic disadvantaged child seems to benefit from structured perceptual-training programs and visual-motor stimulation. Research on comparable middle-class children with preschool and without preschool experience is non-existent.

Sex differences in early childhood education. Childhood developmental studies consistently point out the cognitive, language, and social advancement of female growth patterns over male growth patterns of the young child to the adolescent stage (Gesell & Ilg, 1946; McCandless & Marshall, 1959; McCarthy, 1953). The variable of sex is just as important to consider in preschool educational programs as in the primary school grades. Do males in preschool programs benefit less than his female age mates? Certainly, the kindergarten is a feminine oriented institution, even more so than the primary grades. Are there any effects of the sex variable of socioeconomically middle-class youngsters who have and have not attended preschool?

King's (1955) study indicated that more boys than girls will repeat first grade due to failure in academics with age of entrance (younger or older) having no effect on the pattern of male/female failure percentages. Sapir (1966) in his study of sex differences in

perceptual-motor development found boys never reaching the same development of girls at four and one-half years of age. His research indicated a need for planning more effectively for boys in perceptual-motor readiness as a prerequisite to reading readiness.

Stanchfield (1971) analyzed, as part of her total study, male and female patterns in the development of pre-reading skills in a kindergarten program. In her experimental kindergarten program, the following skills were taught: (1) listening for comprehension of content; (2) listening for auditory discrimination; (3) visual discrimination skills; (4) oral language skills; (5) motor-perceptual skills; and (6) sound-symbol correspondence skills. The girls, as a group, achieved significantly better than the boys in the study on all skills.

Borum and Livson (1965) partially replicated McHugh's earlier 1943 study in assessing I.Q. change at school entry as a factor of preschool attendance. They improved upon the earlier study by analyzing separately for sex differences, a question not considered in the McHugh study which combined the sexes. Girls showed a more increased intelligence (significant mean gains) growth than boys (mean gains were not significant).

Kohlwes (1966) in attempting to investigate sex (and race) differences in the development of underprivileged preschool children, compared male and female on social behavior, I.Q., perceptual-motor, concept formation, and physical development. Females (Caucasian and Negro) were found to be superior in concept development in

appropriateness of social behavior and in mean I.Q. There were no significant differences in the other measures between the sexes. However, there were some race differences.

Sutton (1964) after studying many variables in reading readiness, found that certain characteristics of the child who is ready and who learns to read at an early age emerged. The child is probably a girl with one or more siblings who occasionally read to her, she comes from a relatively high socioeconomic level, and her father probably earns a living largely through mental endeavors rather than physical labor. Her parents are interested in school and their children's progress and have read to her since she was $1\frac{1}{2}$ years of age.

Balow (1963) found in measuring sex differences in first grade reading, significant differences in reading readiness and reading in favor of girls. However, Fox (1944) in an earlier study found kindergarten did not develop reading readiness in favor of either boys or girls. He did not state the kindergarten approach utilized, and socioeconomic factors were not controlled.

Socioeconomic status and school achievement. The relationship of socioeconomic status and school achievement has been the subject of recurrent research during the past fifty years. The earliest studies dealt with relationships between home conditions and dropouts, retardation, and persistence in school. Those early studies of Davis (1948), Neighbours (1910), and Van Denburg (1941) showed a definite relationship between socioeconomic conditions and progress in school. Positive

relationships between socioeconomic levels and vocabulary, arithmetic, reading ability, language ability, health, and personal adjustment were found consistently in these and other earlier studies.

Mayer's (1961) study indicated the wealthiest suburban schools outside of a typical American metropolitan area usually shows an average I.Q. of about 120 while the bottom school of the worst slum area shows an average I.Q. of about 85. Mayer explains that children with high I.Q.'s (135 and above) came from homes where the father was a professional, semi-professional, or in business management. In the same report, it was noted that only 7% of the students with high I.Q.'s came from semi-skilled and unskilled workers.

Havighurst (1964) noted characteristics of an "elaborated language" environment include: accurate grammatical order and syntax regulate what is said; discriminative selection from a range of adjectives between meaning with speech sequences rather than reinforcing dominant words or phrases. The child who has experience with an elaborate language at home, Havighurst states, will have a relatively easy time in school—he must simply go on developing the kind of language and related thinking he has already started.

Giammatted (1967) investigated socioeconomic status and its relationship to vocabulary achievement, reading comprehension, arithmetic skill, problem solving, and a composite of these variables. The population studies consisted of 223 third-grade children from Western Pennsylvania. An interview was constructed to measure socioeconomic

status, and home visitations were utilized to check student responses on the sheet. Several tests of reading and mental ability were administered and intercorrelations were computed between the stated variables, sex, and socioeconomic status. Correlations were positive in all areas, strengthening the accumulative evidence that socioeconomic status affects school achievement. The study also pointed out that children from lower socioeconomic areas did not overcome their cultural deficiency by the third grade.

In a somewhat different approach to the study of social class and cognitive development, Golden & Birns (1967) investigated whether social class differences in intellectual development are present if: (1) children from socially disorganized slum families are compared with children from stable, low-income and middle-income families, (2) the Piaget object scale, a new measure of cognitive development based on Piaget's sensorimotor observations is employed, and (3) effort is made to overcome any motivational factors able to interfere with test performance. In a cross-sectional approach, 184 Negro children, of 12, 18, 24 months of age representing three socioeconomic status groups were compared on the Piaget object scale and the Cattell Infant Intelligence Scale. Results showed no difference among the three groups on either scale. Previous research findings which indicated that social class differences in intellectual development do not appear during the first and second years were confirmed. However, the authors state that social class differences may have been hidden. They explain that after

two years of age, language becomes important for learning, and differences are noted in the three social groups. While sensorimotor intelligence differences are not demonstrated during the first 24 months of life, they may manifest themselves when the child is older, as a sleeper effect, in later learning problem situations. They conclude that home environment does not seem to interfere with the development of sensorimotor intelligence, but the home may lack the kind of stimulation necessary for learning when language comes into the picture, between two and three years of age. In this same theme of social class and perceptual development, Deutsch (1963) states that children living in impoverished surroundings have startlingly high rates of perceptual disabilities as opposed to children in middle- and upper-class homes. He related this to the lack of variety of visual, tactile, and auditory stimulation found in the home of the culturally disadvantaged. He strongly recommends emphasis on perceptual training in the early years, especially in disadvantaged preschool programs. The child with higher socioeconomic status already has accumulated sufficient perceptual stimulation. However, Meyerson's (1967) study of the effect of a perceptual training program for perceptually handicapped kindergarten pupils, found that social economic factors affect reading readiness more than do either Kephart training or visual acuity.

A very recent and well controlled study by Crawford and Eason (1970) partially contradicts the earlier and numerous studies that support an unyielding position on the positive relationship between

socioeconomic status and school achievement. Their longitudinal study (1960 through 1966) investigated the effect of home environment on school achievement. Some of the questions they attempted to answer were: (1) What nonschool variables are the best predictors of school achievement? (2) Is socioeconomic status relevant in trying to explain school achievement? (3) Does I.Q. make a difference or do actions in the home provide a better explanation of a child's performance? At first glance, the answer to these questions appear obvious from the previous studies accumulated over the last 50 years. One child is brighter than the other or he comes from a home characterized as being higher than another in socioeconomic status. However, an examination of their research findings indicated that only a small portion of the variability in children's educational achievement was found related to socioeconomic level. Intelligence was found to be the better single predictor of school achievement, than social class, with I.Q. and a combination of kindergarten achievement, the best predictor of primary school achievement. Most interesting to this writer and crucial to this study was that kindergarten experienced and no kindergarten experienced youngsters did not differ in achievement of the same socioeconomic status.

Bloom (1965) probably sums up this controversy of socioeconomic status and school achievement best when he stated, "It is what the parents do rather than what the parents are that accounts for the learning development of children in the early years (Bloom, 1965, p. 21)." Bloom goes on to discuss in his lecture that, while most of the

studies indicate a relationship of socioeconomic status to school achievement, they are not helpful in trying to help schools and parents improve their situations.

Summary of the review of literature. Much research has been accomplished on the values or effectiveness of early childhood education. However, the review of literature indicates unequivocally that research on the value of early childhood education is very inconclusive. We have evidence that some children seem to gain in I.Q. as a result of enrollment in preschool programs. Most of the intervention programs tend to produce at least temporary I.Q. gains when they concentrate on specific cognitive skills, but even then, the gains are not always certain and may tend to level off within a few years. The largest I.Q. gains reported were observed in the culturally disadvantaged children who had preschool experience.

Some children who have been enrolled in early childhood programs achieve better in primary grades; some do not. "Payoff" in terms of the teaching specific skills related to reading and arithmetic are often the concern of most parents. Research in this area is also inconclusive. Depending on the philosophy of instruction of the preschool program, the results in achievement vary greatly.

Preschool perceptual-motor developmental studies, while fewer in number, are just as inconclusive and vague. The value of perceptual-motor training offered in preschool programs may or may not be helpful to all children.

Studies that have investigated sex differences in early childhood programs and in the primary grades, consistently pointed out the advancement of female growth patterns over male patterns. There are very few studies that contradict this premise of female superiority of growth over male growth patterns. No comprehensive study has been conducted on sex differences of middle-class youngsters exclusively, as related to their attendance or non-attendance in preschool programs. In terms of the previous research on I.Q. gain, achievement gain and perceptual-motor development, the middle-class youngster appears to have been ignored.

BACKGROUND OF THE STUDY

The writer, in his capacity as psychologist with a diagnostic team, has observed and evaluated hundreds of first-graders who were referred because of "problems" affecting their school work. Routinely, information is gathered by the social worker as to the child's pre-school educational experience, such as nursery and kindergarten training. Casual but consistent observations have been made as to the relative benefits of preschool training, in the children who are evaluated. Children from all socioeconomic levels are seen for testing. Consistent patterns were observed as to the motivation of lower- and middle-class parents in obtaining preschool education for their children.

Lower socioeconomic status parents were often financially

strained to enroll their children in the private preschools in north-east Louisiana. Those few parents who managed to enroll their youngsters, expressed a desire to see their children obtain stimulation in basic academics, such as reading and number readiness. The lower socioeconomic parent often stated they did not have the skill, materials or time to provide their children readiness. These parents did not express interest in developing competitive traits in their children, but rather were interested in assuring a readiness for primary school.

Middle-class parental motives were observed in a different framework. "We didn't want our child to feel lost in the first-grade. Most of the other children can just about read when they enter first grade because of what they gained in kindergarten," is a typical response of many middle-class parents. Competition in terms of school performance is extremely important to these parents. Whereas the motive of the lower socioeconomic parents represented an attempt to help their child bridge the gap between the culturally disadvantaged and the culturally privileged, the middle-class parent presented a desire to keep the gap existent.

Several questions emerged from discussions with parents and their children. Does the lower-socioeconomically level child experience significant "cultural shock" and thus reduce his opportunities to gain fully from the middle-class oriented school program? Bereiter and Englemann (1966) have stated that they do experience cultural shock and benefit minimally. The middle-class preschooler does not experience

any cultural shock attending a middle-class preschool. He is immediately ready to "learn how to learn" with minimal social and emotional adjustment necessary. It also must be asked whether the middle-class child, already familiar with the standards and values of the middle-class, its competitive and structured nature, finds the middle-class preschool program "no different from home with a different baby-sitter." In most middle-class homes, the opportunities for early learning are already present. The willingness and ability of his educated parents to teach him are also present. Does a traditional-enrichment preschool program offer him more? This latter question became the central focus of the study.

STATEMENT OF THE PROBLEM

The present study seeks to determine if there is a difference in the first-grade performance of a group of middle-class children who have attended preschool and a group of middle-class children who have not attended preschool. The effect of preschool experience (P.E.) and no preschool experience (N.P.E.) will be compared on the basis of achievement in reading, arithmetic, and perceptual-motor skill development over a five-month (Fall-Spring) first-grade experience. Sex, I.Q., socioeconomic middle-class levels (lower-middle, middle-middle, upper-middle) and length of preschool training represent the major subject variables to be examined. These variables are to be analyzed as to their possible effect on first-grade achievement of the two groups of children.

Research questions. The review of the literature presented, generated several research problems that will be investigated in this study.

1. How does the length (measured in months) of a child's preschool training affect his readiness and achievement for the first grade? In partitioning months of preschool experience into four levels, will length of preschool attendance significantly affect achievement during a five-month period of first grade?
2. Do male and female socioeconomically middle-class children who attended and who did not attend preschool, differ in first-grade achievement?
3. How does preschool experience or lack of preschool training affect first-grade progress of children of different intellectual abilities? The I.Q. range examined in the study will be 75 to 125.
4. Will achievement and perceptual-motor skills differ, within the preschool and non-preschool experienced groups, when compared on three middle-class social levels?
5. Will preschool experience youngsters as a group indicate a wider breadth of achievement gain (pre- and post-test comparisons) during a five-month period in first grade, when compared to children with no preschool experience?

Hypotheses. The research questions are converted into the following experimenter hypotheses, to be tested for significance at an alpha of .05. The following nine major hypotheses and their subclasses reflect all possible comparisons of the independent, dependent, and subject variables under question in the study.

1. At the pre-test (Fall) condition, there is a difference in reading achievement of
 - a. children who have preschool experience (P.E.) and children who do not have preschool experience (N.P.E.)

- b. a comparison of males in the P.E. and N.P.E. groups, and females in the P.E. and N.P.E. groups
 - c. a comparison of the P.E. and N.P.E. groups of children with different mental abilities
 - d. a comparison of the P.E. and N.P.E. groups of children with different middle-class social levels
2. At the pre-test (Fall) condition, there is a difference in arithmetic achievement of
- a. children who have preschool experience (P.E.) and children who do not have preschool experience (N.P.E.)
 - b. a comparison of males in the P.E. and N.P.E. groups, and females in the P.E. and N.P.E. groups
 - c. a comparison of the P.E. and N.P.E. groups of children with different mental abilities
 - d. a comparison of the P.E. and N.P.E. groups of children with different middle-class social levels
3. At the pre-test (Fall) condition, there is a difference in perceptual-motor maturation of
- a. children who have preschool experience (P.E.) and children who do not have preschool experience (N.P.E.)
 - b. a comparison of males in the P.E. and N.P.E. groups, and females in the P.E. and N.P.E. groups
 - c. a comparison of the P.E. and N.P.E. groups of children with different mental abilities
 - d. a comparison of the P.E. and N.P.E. groups of children with different middle-class social levels
4. At the post-test (Spring) condition, there is a difference in reading achievement of
- a. children who have preschool experience (P.E.) and children who do not have preschool experience (N.P.E.)

- b. a comparison of males in the P.E. and N.P.E. groups, and females in the P.E. and N.P.E. groups
 - c. a comparison of the P.E. and N.P.E. groups of children with different mental abilities
 - d. a comparison of the P.E. and N.P.E. groups of children with different middle-class social levels
5. At the post-test (Spring) condition, there is a difference in arithmetic achievement of
- a. children who have preschool experience (P.E.) and children who do not have preschool experience (N.P.E.)
 - b. a comparison of males in the P.E. and N.P.E. groups, and females in the P.E. and N.P.E. groups
 - c. a comparison of the P.E. and N.P.E. groups of children with different mental abilities
 - d. a comparison of the P.E. and N.P.E. groups of children with different middle-class social levels
6. At the post-test (Spring) condition, there is a difference in perceptual-motor maturation of
- a. children who have preschool experience (P.E.) and children who do not have preschool experience (N.P.E.)
 - b. a comparison of the males in the P.E. and N.P.E. groups, and females in the P.E. and N.P.E. groups
 - c. a comparison of the P.E. and N.P.E. groups of children with different mental abilities
 - d. a comparison of the P.E. and N.P.E. groups of children with different middle-class social levels
7. There is a difference in pre-test and post-test (Fall-Spring) comparisons of breadth of achievement gain in reading of
- a. children who have attended preschool (P.E.) and children who have not attended preschool (N.P.E.)

- b. male and female children of the P.E. and N.P.E. groups
 - c. children of different mental abilities in the P.E. and N.P.E. groups
 - d. children of different middle-class social levels of the P.E. and N.P.E. groups
8. There is a difference in pre-test and post-test (Fall-Spring) comparisons of breadth of achievement gain in arithmetic of
- a. children who have attended preschool (P.E.) and children who have not attended preschool (N.P.E.)
 - b. male and female children of the P.E. and N.P.E. groups
 - c. children of different mental abilities of the P.E. and N.P.E. groups
 - d. children of different middle-class social levels of the P.E. and N.P.E. groups
9. There is a difference in pre-test and post-test (Fall-Spring) comparisons of breadth of achievement gain in perceptual-motor maturation of
- a. children who have attended preschool (P.E.) and children who have not attended preschool (N.P.E.)
 - b. male and female children of the P.E. and N.P.E. groups
 - c. children of different mental abilities of the P.E. and N.P.E. groups
 - d. children of different middle-class social levels of the P.E. and N.P.E. groups

CHAPTER II

METHODOLOGY

The present study is a comparative study of the relationship between preschool experience and first-grade achievement of socioeconomic middle-class children. The independent variables of preschool experience (P.E.) or no preschool experience (N.P.E.) are the major comparison variables. The first-grade children who are randomly selected into the study have already had either P.E. or N.P.E. Thus, the study is ex post facto in nature, with the concomitant loss of control over a number of variables. Since over one hundred children are selected into the study, teacher differences at the preschool and first-grade levels are not controlled. However, control over the preschool curriculum is obtained to a degree, by selecting only those children who experienced a traditional enrichment preschool program as opposed to an instructional, cognitive oriented program. (A typical program is presented as Appendix F.) All first-grade children selected into the study will experience a self-contained classroom instructional approach. First-grade curriculums of the six schools reveal more similarities, than differences in their curriculum approach. A detailed description of the first-grade curriculum is presented in this paper. The dependent variable of achievement performance (reading and arithmetic) and perceptual-motor development are measured at two conditions, pre-test and post-test, covering a five-month period. Subject variables of sex I.Q., length of preschool experience at four levels, and socioeconomic middle-class at

three levels (lower-middle, middle-middle, and upper-middle) are observed as they affect the dependent variables.

Subjects. Two groups of approximately 60 first-grade children will comprise the P.E. and N.P.E. groups. All 120 children will be Caucasian and of middle-class socioeconomic status. All subjects are within the I.Q. range 75 to 125. These subjects selected into the P.E. group will have a minimum of 9 months preschool training, with a maximum of 27 months. The socioeconomic levels of the subjects will fall into one of the following middle class partitions: upper-middle, middle-middle and lower-middle. Length of preschool experience of the subjects will be partitioned into the following levels: zero months (no preschool experience), one to nine months (one year experience), ten to eighteen months ($1\frac{1}{2}$ to 2 years experience), and nineteen to twenty-seven months ($2\frac{1}{2}$ to 3 years experience). Appropriate appendices will provide a detailed description of subject characteristics, such as exact number of males and females in the P.E. and N.P.E. groups; means and standard deviations of chronological ages; I.Q.'s, socioeconomic index level, months of P.E. experience of male and female subjects, and data on the performance of the dependent variables. (See Appendices I and J.)

Subject selection. Six schools in two school systems will be selected as participating schools. These schools are in predominantly middle-class-residential areas as concurred by the administrators of the respective school systems and by the Ouachita Parish Tax Assessor. The first determination in subject selection will be to identify all Caucasian first-grade students who have had preschool

training and those who have no training. The Warner, Meeker and Eell's Scale will then be applied to select those who meet the established social-class status requirement. All those first-graders in the two categories (P.E. and N.P.E.) who do not meet the social-class requirement (those over 40 and under 23 weighted score equivalents) will be eliminated from the sampling. Those students who remain will be selected and placed in the respective groups (P.E. and N.P.E.) by the use of the stratified constant sampling technique with randomization. The constant of 38 percent will be used in selecting the sample of approximately 120 subjects. Nineteen percent preschool experienced and nineteen percent non-preschool experienced children will be selected from the total number of Caucasian first-graders in each of the six participating schools. The sample obtained by the constant method will not yield a sample precisely proportional to the population. However, schools with the largest first grade enrollment will have the greatest representation in the sample. Since each of the schools will not be analyzed as a separate entity, exact proportional representation is not necessary (Fox, 1969).

In terms of total number of children making up the "population group," the final sampling of approximately 120 children would not exhaust the population and will provide a good sample. The following represents the total number of first grades, total number of first grade children, Caucasian children only, presently* enrolled in first grades of the six schools selected for the study.

<u>School</u>	<u>Number of First Grades</u>	<u>Total Number of Children in First Grades</u>	<u>Total Number of Caucasian First-Graders</u>
#1	3	72	68
#2	2	44	37
#3	3	79	45
#4	2	45	36
#5	4	88	87
#6	<u>3</u>	<u>60</u>	<u>49</u>
Totals	17	388	322

*Membership totals presented are for the 1972-73 school year, 2nd month, supplied by the participating school systems.

From the total number of Caucasian first-grade students at these schools, approximately 90% of the 322 will be eligible for the social-class ranks as defined for this study. A check of the school records also indicates that a ratio of 65% have had to 35% have not had pre-school experience. Due to the considerable reduced number of N.P.E. children, the population group will be somewhat more exhausted for the N.P.E. sample selection than for the P.E. group. First-grade repeaters will not be used in the study

Research Design. The basic research model of the study is a two-group pretest-posttest control design with randomization. With "X" representing the exposure of a group to a treatment or an event, the effects of which are to be measured; "O" some process of measurement; "R" random assignment to separate groups; a left-to-right dimension representing the temporal order; and with the "O's" in a vertical dimension representing simultaneous measurement; a graphic representation is achieved.

			Pre-test	Post-test
Group I	R	X	0	0
Group II	R		0	0

The symbol "X" in this study indicates that subjects from Group I have obtained preschool educational training and the absence of "X" for Group II indicates no experience in preschool training. The "0's" represent the simultaneous measurement of achievement (reading and arithmetic) and perceptual-motor development at two conditions, pre-test and post-test, for both groups. A five-month interval is represented by the row dimension. Randomization is obtained for both groups.

Procedure. All subjects will be tested individually. Children will be tested (pre-test condition) in the last two weeks in October, 1972, to allow enough time for accommodation to their school setting. Post-testing will occur the first two weeks in April, 1973, allowing a full five months of first-grade experience between pre- and post-test conditions. Three professional diagnosticians will assist the writer in the data collection. One has a Ph.D., one has two masters degrees, and the other has a masters degree. All three have taught in both the public school and at the college levels. All are employed or have been employed at the Northeast Louisiana Special Education Center, Monroe, Louisiana. Each has an average of six years of experience in the evaluation of school children. They further meet the requirements of "competent authority" in Special Education set down by the Louisiana State Board of Education, Special Education Department, Baton Rouge,

Louisiana. Two of the four examiners will administer the Wide Range Achievement Test (WRAT) only, as they are skilled in this tool. The other two examiners will administer the Peabody Picture Vocabulary Test (PPVT) and the Bender-Gestalt tests as they have skill in administering hundreds of these tests. The writer and one of the examiners will separately score all the Bender test results and consult on the final scoring. Although the Bender Scoring System by Koppitz is standardized, some subjective judgments are necessary. This procedure of separately scoring and consultation will enhance the accuracy of the total scores obtained.

The total testing time per child is anticipated to be 30 to 45 minutes at the pre-test and, of course, the same at the post-test condition. No special instructions or rehearsal for the experienced examiners will be necessary, as strict following of the standardized instructions for each of the tests administered will be accomplished. The teachers will give their students advance notice of the testing and were instructed to tell the children that some men would "play some picture games" with them. The children will be escorted to and from their classes, to the testing rooms, by one of the examiners. No difficulty is anticipated in establishing rapport with the subjects. Permission has been granted by the two school boards, the principal and teachers of the respective schools to use their children. (See Appendices B and C.) Parental permission is not necessary, as was informed by the school systems. Adequate physical testing conditions are assured as the writer has previously tested in these six schools.

Instrumentation. The Wide Range Achievement Test (WRAT) (Jastak and Jastak, 1965), Peabody Picture Vocabulary Test (PPVT) (Dunn, 1965), Bender-Gestalt Test for Young Children (Koppitz, 1964) and the Warner, Meeker and Eell's Scale (1957) are the instruments to be used to measure achievement, I.Q., perceptual-motor development, and social index level, respectively. These tests are selected for their objectivity and ease in administration and scoring, as well as their reported high levels of validity and reliability. The WRAT, PPVT, and Bender-Gestalt have high interest appeal to young children and also require minimal verbal responses from the subjects. The latter characteristic of the tests, that is, in requiring minimal verbal responses, reduces the likelihood that the results would be affected by subjects with speech (articulation) and language deficiencies. Brevity of the tests is also considered since over one hundred children are planned as subjects for the study. (A detailed description of each of the instruments is presented in Appendix G.)

Description of Traditional Enrichment Preschool. Children selected as part of the preschool experience (P.E.) group will have training in basically a modified preschool enrichment-instruction program as briefly described earlier in this paper. Preschool training is further defined as regular attendance at an educational institution outside the child's home before reaching the age for compulsory school attendance. Preschool experience will not be accepted at institutions primarily intended for care of the children rather than educate them,

because for one reason or another their parents are unable to look after them at home. Personal contact with the directors of the available private preschools in the city and parish (county) revealed striking similarities in their approach and philosophy to preschool training. The children selected for the P.E. group will have experience basically in an enrichment program with minimal formal instruction in academics. First-grade children who attended a strictly instructional or teacher-and-goal oriented preschool will not be included in the study. A composite picture of the type of preschool experience by those in the P.E. group is characterized by the following: practically all the preschools in the study are church supported, non-profit school established as a service to the community; most (over 90%) of the preschool teachers have at least a bachelor's degree in education; most describe their programs as a challenging program without pressure in terms of formal readiness and academics; number and reading readiness opportunities are introduced not through explicit instruction or direction but through games, music, alphabet, stories, dramatic play, art, science, history, movies, free play, physical education, poems, and special visitors. Special number and reading workbooks are not introduced until such preparatory work is accomplished in terms of developing self-concept, self-understanding, peer relationship development, and satisfactory emotional maturity. Most of the directors interviewed did not feel workbooks stifled creativity in their children, because they were not used exclusively in the total program. In a typical nursery or kindergarten class, workbooks were not introduced until the last half of the

"school year," and then used in a controlled and intermittent fashion, such as only two days a week. The general philosophy of the preschool programs used in this study is that at the preschool level, attention is focused on the child. Elementary schools must focus on skills to be learned.

Children attend either nursery or kindergarten from 8:00 a.m. to 11:00 a.m., five days a week. An example of a daily schedule of a typical enrichment preschool program will be included in an appendix. The schedule provided is an actual daily schedule of one of the participating preschools.

Description of school systems and the first grade. Six schools, representing 17 first-grade classes, in two school systems will be used in the study. The Monroe City School System, Monroe, Louisiana, which registered 9,806 school children (1972-73 school term) and the Ouachita Parish School System, Ouachita Parish (in which the City of Monroe resides), which enrolled 17,800 children, represent the school systems. Both of the school systems have basically a "neighborhood school" concept or a zoning breakdown in the placement of the children in the schools. Thus, there are several schools located in basically middle-class residential areas. Within these two school systems, there is one public kindergarten program (1972-73). With an improvement in the finances, the school systems plan for an eventual comprehensive pre-school program.

Grade-one curriculum within these schools places emphasis upon

the language arts and mathematics but also stresses the child's development in the area of social living, physical education, art and music. Social studies are included into the curriculum in order to widen the students' understanding and awareness of the world about them. Implementation of a curriculum philosophy is generally left up to the individual school, and the traditional self-contained primary classroom approach is generally used. (The writer has interviewed all the principals of the six schools to be selected into the study. First-grade curriculum and goals in the teaching of the children were found to be strikingly similar. This is to be expected since all six schools are under the same basic school board structure. The social class index of the teachers included into the study was also discussed. At all schools, it was ascertained that the teachers would easily classify as socioeconomically middle-class, with similar aspirations and goals for their students.)

Data analysis. Pretest scores (reading, arithmetic and perceptual-motor scores) and I.Q. will be treated as concomitant variables in adjusting the post-test scores for the resulting analyses of variances. Utilizing the pretest scores as a concomitant variable offers a more precise analysis and is preferable to simple pretest, post-test gain-score comparisons. I.Q. scores are more realistically utilized as a concomitant (continuous) variable than artificially partitioned into levels. The model for the resulting "treatment by levels" analysis of variance will be fixed, with an error term of Sw^2

for interaction, row and column effects. The three statistical models (for reading, arithmetic, and perceptual-motor scores) presented in Appendix M depict the specific treatment by levels design and interaction effects that will be examined in the study. Standard scores rather than grade-level performances in reading and arithmetic will be used as they adjust for the slight differences in chronological ages of the subjects. The Bender-Gestalt (perceptual-motor) scoring errors made by the subjects will be converted into standard scores, thus making possible comparisons at all chronological ages. (See Appendix K.)

REFERENCES

- Allerhand, M. E. Impact of Summer 1965 Head Start on Children's Concept Attainment During Kindergarten. ERIC, Accession Number: ED015773, Cleveland: Western Reserve University, 1965, 100 pp.
- Balow, I. Sex differences in First Grade Reading. Elementary English, 40, March, 1963, pp. 303-306.
- Bear, Roberta M. "Issues in Early Learning and Preschool Education: A Summary of the Conference Discussions." Early Education. (Edited by Robert D. Hess and Roberta M. Bear.) Chicago: Aldine Publishing Co., 1968. Chapter 17, pp. 223-30.
- Bereiter, C., and Englemann, S. Teaching Disadvantaged Children in the Preschool. New Jersey: Prentice-Hall, Inc., 1966.
- Berson, Minnie P. Early Childhood Education. American Education, 4: October, 1968, pp. 7-13.
- Bloom, B. S. Early Learning in the Home. Lecture given at the University of California at Los Angeles, July, 1965, ERIC, Accession Number: ED19127, 30 pp.
- Bloom, B. Stability and Change in Human Characteristics. New York: John Wiley, 1964.
- Borum, Elizabeth, and Livsen, N. Mental Test Score Changes at Kindergarten Entry. The Journal of Experimental Education, V. 34, N. 1, Fall, 1965, pp. 89-92.
- Brazziel, W. F. Two Years of Head Start. Phi Delta Kappan, 48: March, 1967, pp. 344-48.
- Bruner, J. The Process of Education. Cambridge, Mass.: Harvard University Press, 1961.
- Buros, O. K. (ed.). Fifth Mental Measurements Yearbook. Highland Park, New Jersey: Gryphon Press, 1965, p. 820.
- Butler, Annie L. Current Research in Early Childhood Education: A Compilation and Analysis for Program Planners. Washington, D. C.: NEA Center, 1970.

- Chesteen, H. E. Effectiveness of the Head Start Program in Enhancing School Readiness of Culturally Deprived. ERIC, Accession Number: EDO20771, East Baton Rouge, La.: Community Advancement, Inc., 1966, 170 pp.
- Crawford, Patricia, and Eason, G. School Achievement: A Look at the Effects of the Home. Ontario: Toronto Board of Education, Research Dept., Jan., 1970, ERIC, Accession Number: EDO47777.
- Davis, Allison. Social Class Influences Upon Learning. Cambridge: Harvard University Press, 1948.
- Deutsch, M. "The Disadvantaged Child and the Learning Process," in A. H. Passow (ed.), Education in Depressed Areas. New York: Teachers College Press, Columbia University, 1963.
- Deutsch, Cynthia P., and Deutsch, M. "Brief Reflections on the Theory of Early Childhood Enrichment Programs," in Hess, R. D., and Bear, Roberta B. (eds.), Early Education. Chicago: Adine Publishing Co., 1968, Chapter 7, pp. 83-91.
- Dunn, L. M. Peabody Picture Vocabulary Test. Beverly Hills, California: Western Psychological Services, 1965.
- Elkind, D. Preschool Education: Enrichment or Instruction? Childhood Education, 45, February, 1969, pp. 321-28.
- Fast, Irene. Kindergarten Training and Grade One Reading. Journal of Educational Psychology, 48: January, 1957, pp. 52-57.
- Faustman, M. N. Some Effects of Perception Training in Kindergarten on First Grade Success in Reading. Paper presented at the International Reading Association Conference, Seattle, May 4-6, 1967.
- Fisher, J. T., and Hawley, L. S. A Few Buttons Missing. Philadelphia: J. B. Lippincott, 1951, pp. 13-14.
- Fox, D. J. The Research Process in Education. New York: Holt, Rinehart & Winston, Inc., 1969.
- Fox, R. B., and Powell, M. Evaluating Kindergarten Experiences. Reading Teacher, 18, November, 1944, pp. 118-20.
- Frost, J. L., and Hawkes, G. R. (eds.). The Disadvantaged Child. Boston: Houghton Mifflin, 1970, Westinghouse and Ohio University Study, "The Impact of Head Start on Children's Cognitive and Affective Development," pp. 187-201.

- Fuller, Elizabeth M. Values in Early Childhood Education. Washington, D. C.: National Education Association (NEA), 1960, 72 pp.
- Fuschillo, Jean E. Enriching the Preschool Experience of Children from Age Three: The Evaluation. Children: 15, July-August, 1968, pp. 140-43.
- Gesell, A., and Llg, Frances L. The Child from Five to Ten. New York: Harper & Brothers Publishers, 1946.
- Gesell, A. The Pre-school Child. Cambridge, Mass.: Riverside Press, 1923.
- Giammatted, M. C. Socioeconomic Status and School Achievement. ERIC, Accession Number: EDO30163, Northwest Regional Educational Lab., Portland, Ore., 1967, 15 pp.
- Goetch, E. W. The Kindergarten As a Factor in Elementary School Achievement and Progress. University of Iowa Studies in Education, V. 3, 1926, pp. 1-47.
- Golden, M., and Birns, B. Social Class and Cognitive Development in Infancy. Yeshiva University, New York, N. Y., Eenstein College of Medicine, March, 1967, ERIC, Accession Number: EDO19111.
- Goodenough, Florence L., and Maurer, Katherine B. The Mental Development of Nursery School Children Compared with That of Non-Nursery School Children. Intelligence: It's Nature and Nurture, 39th Yearbook, Part II, Public School Publishing Co., 1940, Chapter 9, pp. 161-78.
- Gray, Susan W. Selected Longitudinal Studies of Compensatory Education—A Look from the Inside. ERIC, Accession Number: EDO33762, George Peabody College, 1969, 13 pp.
- Havighurst, R. J. Characteristics of the Disadvantaged. Journal of Negro Education, 1964.
- Halliwell, J. W. A Comparison of the Achievement of Early and Late Starters in Reading Related and Non-Reading Related Areas in Fourth and Fifth Grades. Elementary English, October, 1964, pp. 631-39.
- Hampleman, R. S. A Study of the Comparative Reading Achievements of Early and Late School Starters. Elementary English, May, 1959, pp. 331-34.
- Heldreth, G. The Effect of School Environment Upon Stanford-Binet Tests of Young Children. 27th Yearbook, National Social Studies in Education, 1928, Part I, pp. 355-359.

- Homer, L. J., McGinnis, C., and McGinnis, J. Diagnosis and Treatment of the Disabled Reader. London: MacMillan, Collier-Macmillan Ltd., 1970, p. 48.
- Jastak, J. R., and Jastak, S. R. The Wide Range Achievement Test: Manual. Wilmington, Delaware: Guidance Associates, 1965.
- Jenson, A. R. How Much Can We Boost IQ and Scholastic Achievement? Harvard Educational Review, 39: Winter, Summer 1969, pp. 449-83.
- Kagan, Jerome. "Kagan Counters Freud, Piaget Theories on Early Childhood Deprivation Effects (Reported by Bill Pratt). American Psychological Association (APA) Monitor, Vol. 4, No. 2, Feb. 1973, pp. 1, 7.
- Karnes, Merle B. A Research Program to Determine the Effects of Various Preschool Intervention Programs on the Development of Disadvantaged Children and the Strategic Age for Such Intervention. Urbana, Illinois: University of Illinois, 1968, ERIC, Accession Number: EDO17319.
- Karnes, Merle B., et al. A Comparative Study of Two Preschool Programs for Culturally Disadvantaged Children: A Highly Structured and a Traditional Program. Urbana, Illinois: University of Illinois, 1966, ERIC, Accession Number: EDO16524.
- Kawin, Ethal, and Hoefer, Carolyn. A Comparative Study of a Nursery-School Versus a Non-Nursery-School Group. Chicago, Illinois: The University of Chicago Press, 1931.
- Keim, R. P. Visual-Motor Training Readiness and the Intelligence of Kindergarten Children. Journal of Learning Disabilities, V. 3, N. 5, May, 1970, pp. 256-59.
- Keister, B. U. Reading Skills Acquired by Five-Year-Old Children. Elementary School Journal, April, 1941, pp. 587-96.
- Keogh, Barona, and Smith, Carol. Visual-Motor Ability for School Prediction: A Seven-Year Study. Perceptual and Motor Skills, V. 25, 1967, pp. 101-110.
- King, I. B. Effect of Age of Entrance into Grade 1 upon Achievement in Elementary School. Elementary School Journal, February, 1955, pp. 331-36.
- Kohlwes, G. F. Sex and Race Differences in the Development of Underprivileged Preschool Children. ERIC, Accession Number: EDO19992, April, 1966, Washington University, Seattle, 14 pp.

- Koppitz, Elizabeth M. The Bender Gestalt Test for Young Children. New York: Grune & Stratten, 1964.
- LaCrosse, Jr., E. R., et al. The First Six Years of Life: A Report on Current Research and Educational Practice. Genetic Psychology Monographs, 82, 1970, pp. 161-266.
- Margolin, Edythe. Crucial Issues in Contemporary Early Childhood Education. Childhood Education, 45: May, 1969, pp. 500-04.
- Mayer, M. The Good Slum Schools. Harpers, 222 (April, 1961), pp. 46-52.
- McCandless, B. R., and Marshall, H. P. Sex Differences in Social Acceptance and Participation of Pre-School Children. Child Development, 28, 1957, pp. 421-425.
- McCarthy, D. Some Possible Explanations of Sex Differences in Language Development and Disorders. Journal of Psychology, 35, 1953, pp. 155-60.
- McHugh, G. Changes in IQ at Public School Kindergarten Level. Psychological Monographs, V. 55, 1943, pp. 31-33.
- McV. Hunt, J. Intelligence and Experience. New York: The Ronald Press, 1961.
- Meyerson, D. W. A Reading Readiness Training Program for Perceptually Handicapped Kindergarten Pupils of Normal Vision: Final Report. Stanford University, California, May, 1967, ERIC, Accession Number: EDO13119A.
- Moed, G., Wright, B. W., and James, Patricia. Interest Correlations of the WISC and Two Picture Vocabulary Tests. Educational and Psychological Measurement, XXIII (1963), p. 362.
- Morris, Berniece, and Morris, G. L. Evaluation of Changes Occurring in Children Who Participated in Project Head Start. ERIC, Accession Number: EDO17316, George L. Kearney State College, 1966, 122 pp.
- Neighbours, O. J. Retardation in the Schools and Some of the Causes. Elementary School Teacher, 1910, pp. 119-135.
- Osborn, D. K. Some Gains from the Head Start Experience. Childhood Education, 44, September, 1967, pp. 8-11.

- Page, J. D. The Effect of Nursery School Attendance Upon Subsequent IQ. Journal of Psychology, 10, 1940, pp. 221-30.
- Piaget, J. The Psychology of Intelligence. New York: Harcourt, Brace, 1970.
- Prendergast, R. Pre-reading Skills Developed in Montessori and Conventional Nursery Schools. Elementary School Journal, 70, 1969, pp. 135-41.
- Rohwer, W. D. On Attaining the Goals of Early Childhood Education. Office of Educational Opportunity (OEO), on Research in Early Childhood Education, Washington, D. C., 1970.
- Sapir, Selma G. Sex Differences in Perceptual-Motor Development. Perception and Motor Skills, 22, 1966, pp. 987-92.
- Schermann, Ada. "Cognitive Goals in the Nursery School." Early Childhood Education Rediscovered: Readings. (Edited by Joe L. Frost.) New York: Holt, Rinehart & Winston, 1968, Chapter 4, pp. 265-76.
- Seifert, K. Comparison of Verbal Interaction in Two Preschool Programs. Young Children, 24: Sept., 1969, pp. 350-55.
- Solan, H. A. Perceptual Testing and Training Methods Used in the Primary Grades. Journal of Optometry, V. 22, N. 3, May-June, 1968, pp. 31-34.
- Stanchfield, Jo M. Development of Pre-Reading Skills in an Experimental Kindergarten Program. Reading Teacher, V. 24, N. 8, May, 1971, pp. 699-707.
- Strang, Ruth. Diagnostic Teaching and Reading. New York: McGraw Hill, 1964, pp. 164-65.
- Sutton, Margorie. Readiness for Reading at the Kindergarten Level. Reading Teacher, V. 17, January, 1964, pp. 234-40.
- Thompson, M. M. The History of Education. New York: Barnes & Noble, Inc., 1951.
- Van Denburg, J. K. Causes of Elimination in the Public Secondary School of New York City. Teachers College Press, Columbia University, 1941.
- Warner, W. L., Meeker, Marchia, and Eells, K. Social Class in America: A Manual of Procedure for the Measurement of Social Status. Massachusetts: Science Research Associates, Inc., 1957.

- Weber, Evelyn. The Kindergarten: Its Encounter with Educational Thought in America. New York: Teachers College Press, 1969.
- Wellman, Beth L. "The Effects of Preschool Attendance upon Intellectual Development." Child Behavior and Development: A Course of Representative Studies. (Edited by R. G. Barker and others.) New York: McGraw-Hill Book Co., 1943, Chapter 14, pp. 229-44.
- Wellman, Beth L. Iowa Studies on the Effects of Schooling. Intelligence: Its Nature and Nurture. 39th Yearbook, Part II, National Society for the Study of Education, Bloomington, Ill.: Public School Publishing Co., 1940, pp. 377-99.
- Wolff, M., and Stein, Annie. Head Start Six Months Later. Phi Delta Kappan, 48, March, 1967, pp. 349-50.
- Zigler, E. Training the Intellect Versus Development of the Child. ERIC, Accession Number: EDO34573, New Haven, Conn.: Yale University, 1968.
- Zigler, E., and Butterfield, E. C. Motivational Aspects of Changes in IQ Test Performance of Culturally Deprived Nursery School Children. Child Development, 39, March, 1968, pp. 1-14.

APPENDIX B

PERMISSION LETTER TO CONDUCT STUDY
FROM THE OUACHITA PARISH SCHOOL SYSTEM

OUACHITA PARISH SCHOOL BOARD

100 BRY STREET

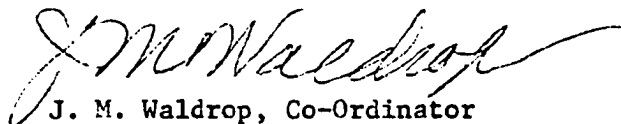
Monroe, Louisiana 71201

October 16, 1972

Dear Principal:

Mr. John Morella, Special Education Department of Northeast Louisiana University, is presently engaged in doing research on the influence of pre-school training on elementary students. We feel that this is a worthwhile endeavor, and if it meets with your approval please feel free to participate.

Sincerely yours,


J. M. Waldrop, Co-Ordinator
Elementary Instruction,
Personnel

JMW:mr

APPENDIX C

PERMISSION LETTER TO CONDUCT STUDY
FROM THE MONROE CITY SCHOOL SYSTEM

MONROE CITY SCHOOLS

P. O. BOX 4180

MONROE, LOUISIANA

October 3, 1972

Mr. John Morella, associate professor of Psychology at Northeast Louisiana University, has been granted permission to do some screening and testing of first grade pupils in the Monroe City Schools so as to gather information for his doctoral dissertation.

He has agreed to share the results of his testing with the schools involved when the study is completed.

Please give Mr. Morella your cooperation insofar as it does not interfere to any appreciable extent with your instructional program.

Sincerely,



B. A. Petterson
Acting Superintendent

APPENDIX D

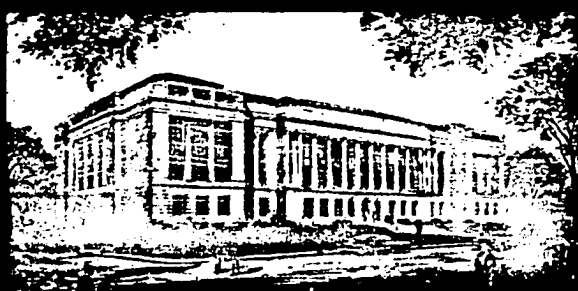
SCHOOLS RATED BY DWELLING AREA CHARACTERISTICS

1. Very High: River Oaks
Saint Christopher's
Saint Paul's
2. High: First Methodist Kindergarten, Monroe
* Lexington
* Sallie Humble
3. Above Average: Jesus, the Good Shepherd
Jack Hayes
* Kiroli
* Lakeshore
Little Red Schoolhouse, Town and Country
4. Average: Claiborne
Drew
First Baptist Kindergarten, West Monroe
Highland Presbyterian Kindergarten, West Monroe
Highland Elementary
Little Red Schoolhouse, Blair St., West Monroe
* Minnie Ruffin
Ouachita Junior High
Parkview Kindergarten
Pinecrest
Sherrouse
Fatima
5. Below Average: Barkdull-Faulk
Bethel Baptist Day Care
Central
Clara Hall
Lenwil
* Lida Benton
Little Flower Academy
Logtown
Millsaps
Riser
Robinson
St. Pascal's
Shady Grove
Swartz
A. L. Smith
West Monroe Kindergarten
Woodlawn
6. Low: Calypso Day Care Center
Crosley
Lincoln
Ransom
Swayze
7. Very Low: Clark
Georgia Tucker

* Schools selected into the study.

APPENDIX E

SUPPORTIVE LETTER OF THE DWELLING AREA
CHARACTERISTICS BY THE OUACHITA PARISH ASSESSOR



ODIS RUSSELL

ASSESSOR

OUACHITA PARISH

P. O. BOX 1127 - MONROE, LOUISIANA 71201

WAYNE HUFF
Chief Deputy

RUSSELL MYATT
Assistant Chief Deputy

October 12, 1972

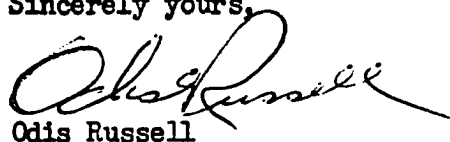
Mr. John Morella
34 Katy Lane
Monroe, Louisiana

Dear Mr. Morella,

I have examined your listing of "Schools Rated by Dwelling Area Characteristics", and in my opinion, as Assessor for Ouachita Parish, the schools are correctly rated.

Please call on me if I can be of further service to you.

Sincerely yours,


Odis Russell

APPENDIX F

AN ENRICHMENT PRESCHOOL SCHEDULE PROVIDED
BY ONE OF THE PARTICIPATING PRESCHOOLS

Daily schedule is flexible from this structure

Monday

8:15 - 9:00	Free Play	
9:00 - 9:30	Science	Homeroom
9:30 - 9:50	Art	
9:50 -10:20	Break - Outside and inside play or movie	
10:25 -10:45	Music and story	
10:45 -11:10	Games and exercises	

Tuesday

8:15 - 9:00	Free Play	
9:00 - 9:30	Numbers	Homeroom
9:30 - 9:50	Free Play	
9:50 -10:45	Weekly Readers or French	
10:45 -11:10	Story	

Wednesday

8:15 - 9:00	Free Play	
9:00 - 9:30	Work Books	
9:30 - 9:50	Art	
9:50 -10:20	Break - Outside and inside play or movie	
10:25 -10:45	Music - Story	
10:45 -11:10	Games and exercises	

Thursday

8:15 - 9:00	Free Play	
9:00 - 9:30	Science	Homeroom
9:30 - 9:50	Free Play	
9:50 -10:20	Break - Outside, inside play - Movie	
10:25 -10:45	Music - French	
10:45 -11:10	Story	

Friday

8:15 - 9:00	Free time	
9:00 - 9:30	Numbers	
9:30 - 9:50	Workbook (Reading)	
9:50 -10:20	Break - Outside, inside play or music	
10:25 -10:45	Music - Story	
10:45 -11:10	History	

APPENDIX G

DATA SHEET FOR PRESCHOOL EXPERIENCED (PE)
SUBJECTS FOR PRE- AND POST-TEST CONDITIONS

CODE FOR READING APPENDICES G AND H

ST. NO. - Student Number

SEX - Male 1, Female 2

S.E.I. - Social Class Index

P.E. - Preschool Experience (Months)

C.A. - Chronological Age (Years, Months)

M.A. - Mental Age (Years, Months)

*R.G.L. - Reading Grade Level

R.S.S. - Reading Standard Score

*AR.G.L. - Arithmetic Grade Level

AR.S.S. - Arithmetic Standard Score

B.E. - Bender Errors

*To compute the actual level, subtract a whole number 2(two) from the figure present - Examples, St. No. 6, Reading (Pre-Test) $35 - 2.0 = 1.5$ (1st grade, 5th month). Student No. 14, Reading $27 - 2.0 = K.7$ (Kindergarten 7th month).

PRE-TEST DATA					PRE-TEST DATA										POST-TEST DATA				
ST	NO	SEX	SEI	PE	EA	RA	LO	RGL	RSS	ARGL	ARSS	GE	MA	LO	RGL	RSS	ARGL	ARSS	GE
4	2	28	9		603	803	112	35	67	25	108	5	710	102	51	113	44	133	5
5	1	28	9		603	801	121	35	108	38	114	5	800	110	40	107	40	110	7
6	2	27	13		607	905	124	37	101	44	116	5	904	124	59	125	44	130	5
3	2	32	15		600	701	111	33	103	59	117	4	606	106	39	117	44	128	1
2	1	32	9		603	803	105	34	105	28	114	13	608	97	43	112	42	110	13
8	2	37	9		604	710	119	35	104	42	123	1	703	102	41	108	48	121	1
10	2	28	15		516	411	37	33	112	20	104	12	710	108	41	121	44	123	6
11	2	23	27		605	800	97	35	108	39	117	8	604	93	47	119	44	114	7
12	2	27	27		609	708	106	35	98	26	105	7	800	100	43	101	39	96	5
13	2	23	27		607	701	100	35	98	39	105	7	800	110	49	110	44	103	6
14	1	23	18		600	500	97	27	80	24	105	12	604	104	30	96	38	114	11
15	1	29	9		605	800	118	40	118	38	114	7	806	116	53	140	52	128	4
16	1	33	22		601	803	107	34	105	29	117	7	710	108	43	125	46	132	4
17	2	32	9		514	501	59	31	107	32	105	13	503	89	34	105	34	105	10
21	1	35	9		604	601	102	26	85	14	80	19	606	95	23	75	24	77	13
26	1	39	18		607	807	116	39	105	42	110	3	904	124	48	109	41	99	2
27	2	30	9		607	701	100	34	96	22	92	4	707	106	40	97	44	103	6
28	1	40	18		606	701	100	33	103	32	101	13	602	91	39	105	39	105	10
29	2	35	9		510	708	117	26	54	27	98	1	800	122	38	114	32	122	2
32	1	27	9		609	601	101	21	75	20	97	9	608	97	30	88	34	96	5
35	1	31	9		600	601	101	33	103	28	110	9	707	106	36	99	38	103	12
39	1	30	18		605	801	110	31	99	32	101	9	710	108	49	123	44	114	6
41	1	26	14		601	801	121	34	105	28	114	11	703	102	38	114	38	114	11
43	2	35	16		607	805	114	34	103	39	105	10	802	112	39	96	42	106	8
45	2	36	9		602	606	107	34	105	26	110	9	706	100	31	108	42	110	19
46	1	36	9		602	605	105	30	97	32	101	8	700	100	36	99	42	110	7
47	2	39	18		601	708	117	33	103	28	114	4	800	110	45	116	44	114	0
49	1	34	9		608	701	100	34	96	42	103	8	804	114	40	97	44	103	2
51	1	39	9		605	505	97	34	105	22	104	2	506	95	40	107	42	110	3
52	2	39	9		607	701	100	41	108	44	104	5	707	106	47	107	44	103	4
53	2	39	18		608	704	104	34	97	28	99	5	802	112	41	90	24	103	2
54	2	33	9		510	708	117	34	114	42	134	9	802	125	43	126	44	129	6
55	2	36	15		601	505	25	20	54	24	102	11	606	95	37	102	42	109	9
59	1	39	9		603	606	105	34	105	39	117	5	606	97	41	108	44	114	10
60	2	38	18		600	507	97	34	114	25	101	12	610	99	41	121	41	121	12
66	1	40	9		604	501	89	24	94	38	103	13	504	81	32	94	42	100	10
70	1	32	18		602	511	90	34	105	26	105	3	511	80	30	105	44	114	2
72	2	33	9		604	505	93	35	103	34	105	5	703	102	41	108	38	103	7
87	1	28	9		511	603	103	32	109	22	109	9	608	102	36	117	44	129	4
80	1	27	18		600	606	105	34	105	29	95	4	800	123	39	117	41	121	5
90	1	27	27		800	803	125	35	105	29	117	5	802	125	49	130	44	122	5
91	1	28	27		604	811	121	35	114	36	110	6	809	118	43	111	41	108	3
92	2	23	27		607	708	106	33	95	29	103	5	606	95	40	97	41	99	9
93	2	23	18		602	801	121	35	114	36	110	13	805	118	46	118	36	90	0
94	2	23	18		601	708	117	36	110	25	117	5	802	110	40	107	42	110	3
95	1	33	18		610	610	98	33	94	39	105	13	606	93	28	103	44	114	8
97	2	33	9		604	706	115	34	105	22	104	12	802	112	39	104	41	108	9
99	2	32	15		601	700	111	35	108	36	110	8	800	110	40	107	41	108	8
100	2	37	27		611	505	91	34	69	41	102	2	604	93	30	96	41	90	2
101	1	33	9		600	702	114	35	103	35	110	3	804	117	44	114	44	114	7
102	2	33	18		605	702	112	35	97	24	95	8	806	95	30	105	44	114	10
104	2	22	9		601	511	99	35	102	29	94	14	604	93	40	107	36	90	11
105	1	23	27		609	507	116	36	99	26	99	3	811	120	55	119	44	103	2

APPENDIX H

DATA SHEET FOR NO PRESCHOOL EXPERIENCE (NPE)

SUBJECTS FOR PRE- AND POST-TEST CONDITIONS

NO PRESCRIPTION EXPERIENCE (NPE)

GEO INFO				PRE-TEST DATA								POST-TEST DATA							
ST	CD	SEX	SEI	PE	CA	DA	LO	DGI	RSS	ARGI	APSS	SE	CA	LO	DGI	RSS	ARGI	APSS	SE
1	1	23	0	604	706	115	36	109	26	110	9	804	124	42	110	41	108	10	
7	1	37	0	604	803	123	35	108	42	123	3	809	118	41	108	44	114	3	
6	2	33	0	602	509	97	35	103	24	109	10	705	115	43	111	45	118	7	
12	2	31	0	602	605	105	32	101	27	89	10	707	106	42	110	38	103	8	
19	2	36	0	601	706	115	39	117	24	117	5	805	116	50	125	44	114	7	
20	2	40	0	601	509	97	26	87	26	87	10	700	100	29	81	25	75	8	
22	2	30	0	607	506	95	35	97	41	108	11	707	106	40	97	41	99	9	
23	2	35	0	510	501	89	33	112	26	94	9	506	93	44	123	22	101	7	
24	2	35	0	601	509	97	33	103	28	116	7	703	102	39	105	44	110	6	
25	1	35	0	609	610	98	33	94	42	109	13	802	112	35	94	41	99	4	
30	1	36	0	610	701	100	35	97	42	110	0	804	114	39	96	44	103	5	
31	2	35	0	606	603	93	32	92	39	102	2	709	100	39	105	41	103	1	
32	2	36	0	601	606	105	32	101	25	110	5	606	95	38	103	42	110	9	
34	2	36	0	511	509	97	29	101	24	114	8	510	97	38	114	42	122	6	
35	1	35	0	602	610	109	33	103	28	116	8	707	106	32	108	44	114	3	
37	2	35	0	601	511	89	22	73	23	80	2	510	87	39	105	42	108	4	
38	2	36	0	603	509	97	30	95	24	96	15	703	102	40	107	39	105	12	
40	1	31	0	603	606	105	34	105	38	114	9	710	108	43	112	44	114	6	
42	1	40	0	608	509	97	33	86	25	75	12	510	87	23	72	27	78	9	
44	2	31	0	601	710	119	34	105	42	121	13	700	100	34	90	31	103	11	
45	1	30	0	511	610	109	20	104	22	109	15	705	95	38	103	41	103	12	
50	1	39	0	605	509	97	31	98	32	101	10	606	95	40	107	44	116	10	
53	2	39	0	600	708	117	20	86	20	86	12	703	115	39	117	41	121	6	
57	1	39	0	603	805	125	34	105	41	121	15	804	114	42	110	44	114	4	
59	1	34	0	604	703	115	33	103	22	101	8	710	108	39	105	42	110	10	
61	2	39	0	609	703	102	29	86	34	97	11	700	100	40	97	38	95	9	
62	2	38	0	509	703	113	33	112	26	96	11	705	117	40	119	38	114	9	
63	2	30	0	603	501	89	24	82	25	85	10	504	81	30	98	29	86	12	
64	2	39	0	603	501	89	26	82	25	85	10	505	83	21	72	25	79	6	
67	1	39	0	608	410	75	12	55	14	55	18	506	82	24	73	26	76	19	
68	1	38	0	608	701	100	30	88	22	92	5	804	114	39	96	34	88	6	
69	2	39	0	600	411	87	29	92	30	96	13	602	91	36	110	35	110	15	
71	2	39	0	610	801	110	34	97	20	89	10	800	110	39	96	44	103	9	
73	2	34	0	510	505	93	35	117	34	114	11	703	115	39	117	42	123	13	
74	2	30	0	603	501	89	24	82	25	85	10	501	77	28	85	27	83	8	
75	1	30	0	601	611	87	26	87	18	69	17	502	85	29	86	26	81	14	
76	1	39	0	606	505	85	19	71	19	89	20	511	80	28	81	21	70	18	
77	2	30	0	604	501	89	29	92	27	89	14	700	100	36	99	29	85	11	
78	1	39	0	700	708	106	33	87	25	86	5	700	100	39	96	44	103	14	
79	1	34	0	608	509	87	24	77	30	84	6	504	81	35	90	34	88	5	
80	1	39	0	605	411	87	25	85	22	78	9	511	89	34	96	36	99	6	
81	1	39	0	600	501	89	25	80	30	95	9	504	81	29	83	32	101	6	
82	2	36	0	601	605	75	23	80	25	85	15	504	81	33	85	34	95	10	
83	1	39	0	510	501	89	26	94	25	92	15	506	93	33	103	36	109	10	
84	1	34	0	511	502	91	32	109	22	109	17	510	97	39	117	38	114	15	
85	1	38	0	600	411	87	24	83	30	97	14	506	91	35	108	36	110	12	
86	2	39	0	609	602	91	34	86	24	86	4	511	89	45	104	44	103	5	
88	2	32	0	600	803	123	35	108	38	114	5	710	121	41	121	44	128	3	
96	2	37	0	607	605	96	34	96	22	92	15	705	104	42	99	38	94	16	
99	1	32	0	609	701	100	34	96	38	105	7	610	99	39	96	41	99	7	
103	2	33	0	510	601	101	36	119	20	127	8	604	104	41	121	44	128	4	
106	1	37	0	511	502	91	19	76	14	64	16	511	97	26	87	29	94	12	
107	1	37	0	510	701	111	36	114	22	109	8	704	113	41	121	44	128	6	

APPENDIX I

MEANS AND STANDARD DEVIATIONS OF PRESCHOOL GROUP
BY SEX, TOTAL SUBJECTS AT PRE- AND
POST-TEST CONDITIONS

PRESCHOOL EXPERIENCE (PE)

	MALE		FEMALE		TOTAL	
	MEAN	ST DEV	MEAN	ST DEV	MEAN	ST DEV
SEI	31.4	4.7	32.1	5.0	31.8	4.9
CA in Months— Pre-Test	75.6	3.2	75.6	3.7	75.6	3.5
MA in Months— Pre-Test	84.0	13.2	83.8	13.4	83.9	13.3
MA in Months— Post-Test	88.0	12.5	89.3	10.8	88.7	11.6
IQ Pre-Test	106.9	9.1	106.3	10.4	106.6	9.8
IQ Post-Test	105.5	11.8	105.6	9.6	105.5	10.7
RGL—Pre-Test	1.3	.33	1.4	.34	1.4	.34
RGL—Post-Test	2.1	.41	2.2	.42	2.1	.41
AGL—Pre-Test	1.5	.35	1.6	.36	1.6	.36
AGL—Post-Test	2.1	.41	2.2	.41	2.2	.41
Bender Errors— Pre-Test	8.0	4.1	7.3	3.6	7.6	3.9
Bender Errors— Post-Test	6.7	3.5	6.3	3.8	6.5	3.7
PE in Months	14.4	6.5	15.5	6.6	14.9	6.5

N = 53

Males = 25
Females = 28

APPENDIX J

MEANS AND STANDARD DEVIATIONS OF NO PRESCHOOL GROUP
BY SEX, TOTAL SUBJECTS AT PRE- AND
POST-TEST CONDITIONS

NO PRESCHOOL EXPERIENCE (NPE)

	MALE		FEMALE		TOTAL	
	MEAN	ST DEV	MEAN	ST DEV	MEAN	ST DEV
SEI	36.4	3.7	36.0	2.9	36.2	3.3
CA in Months— Pre-Test	76.2	4.1	74.3	3.5	75.2	3.9
MA in Months— Pre-Test	75.4	13.4	74.3	12.4	74.8	12.9
MA in Months— Post-Test	82.4	14.8	80.9	10.8	81.6	12.9
IQ Pre-Test	98.6	12.7	98.7	10.8	98.6	11.7
IQ Post-Test	100.1	11.9	100.3	11.7	100.2	11.8
RGL—Pre-Test	0.9	.29	1.1	.31	1.0	.30
RGL—Post-Test	1.6	.36	1.8	.38	1.7	.37
AGL—Pre-Test	1.1	.31	1.1	.31	1.1	.31
AGL—Post-Test	1.8	.38	1.8	.38	1.8	.38
Bender Errors— Pre-Test	11.0	5.9	9.4	3.3	10.2	4.8
Bender Errors— Post-Test	9.0	4.5	8.3	3.4	8.6	4.0

N = 53

Males = 25
Females = 28

APPENDIX K

CONVERSION TABLE OF BENDER-GESTALT ERRORS TO
STANDARD SCORES AT PRE- AND POST-TEST
CONDITIONS FOR ALL SUBJECTS

ST. NO.	PRE	ST.S. PRE	POST	ST.S. POST
1	9.	98.	10.	86.
2	13.	83.	11.	82.
3	4.	116.	1.	127.
4	5.	106.	5.	99.
5	5.	112.	7.	98.
6	5.	106.	3.	107.
7	3.	120.	3.	114.
8	1.	127.	1.	122.
9	10.	94.	7.	98.
10	12.	91.	6.	109.
11	8.	101.	7.	98.
12	7.	98.	5.	99.
13	7.	98.	6.	95.
14	12.	87.	11.	91.
15	7.	98.	4.	110.
16	7.	105.	4.	110.
17	13.	87.	10.	94.
18	10.	94.	8.	94.
19	5.	112.	7.	98.
20	10.	94.	8.	94.
21	19.	61.	13.	74.
22	11.	82.	9.	83.
23	9.	103.	7.	105.
24	7.	105.	6.	102.
25	13.	74.	4.	103.
26	3.	114.	2.	112.
27	4.	110.	4.	103.
28	13.	74.	10.	86.
29	1.	135.	3.	120.
30	0.	126.	5.	99.
31	2.	118.	1.	122.
32	8.	101.	9.	90.
33	9.	90.	8.	87.
34	8.	107.	6.	109.
35	8.	101.	3.	114.
36	9.	98.	12.	87.
37	2.	123.	4.	110.
38	13.	83.	12.	78.
39	9.	99.	6.	102.
40	9.	98.	6.	102.
41	11.	91.	11.	82.
42	12.	78.	9.	83.
43	10.	86.	8.	87.
44	11.	91.	11.	82.
45	9.	91.	14.	94.
46	4.	109.	7.	98.
47	4.	116.	0.	126.
48	13.	87.	12.	87.
49	6.	102.	2.	112.
50	10.	94.	10.	86.
51	2.	123.	3.	114.
52	5.	106.	4.	103.
53	5.	106.	3.	107.

8

ST. NO.	PRE.	ST.S. PRE.	POST	ST.S. POST
54	6.	103.	6.	109.
55	11.	91.	8.	94.
56	12.	87.	6.	109.
57	13.	83.	4.	110.
58	5.	112.	10.	86.
59	6.	109.	10.	86.
60	12.	87.	12.	87.
61	11.	82.	9.	83.
62	11.	95.	9.	98.
63	10.	94.	12.	78.
64	10.	94.	6.	102.
65	13.	83.	10.	86.
67	18.	54.	19.	41.
68	5.	106.	6.	95.
69	13.	83.	15.	76.
70	3.	120.	2.	118.
71	10.	86.	9.	83.
72	5.	112.	7.	98.
73	11.	95.	13.	83.
74	10.	94.	8.	94.
75	17.	69.	14.	70.
76	30.	6.	18.	45.
77	14.	80.	11.	82.
78	8.	87.	14.	62.
79	6.	102.	5.	99.
80	9.	98.	6.	102.
81	9.	98.	6.	109.
82	13.	83.	10.	86.
83	15.	79.	10.	94.
84	17.	71.	15.	76.
85	14.	80.	12.	87.
86	4.	110.	5.	99.
87	9.	103.	4.	116.
88	5.	112.	3.	120.
89	4.	116.	5.	112.
90	5.	112.	5.	112.
91	6.	109.	3.	114.
92	5.	106.	8.	87.
93	13.	83.	9.	96.
94	5.	112.	3.	114.
95	13.	74.	8.	87.
96	15.	66.	16.	53.
97	12.	87.	8.	94.
98	7.	98.	7.	91.
99	8.	101.	8.	94.
100	3.	114.	2.	112.
101	8.	101.	7.	109.
102	8.	101.	10.	86.
103	9.	107.	4.	116.
104	14.	80.	11.	82.
105	3.	114.	2.	112.
106	16.	75.	12.	87.
107	8.	107.	6.	109.

APPENDIX L

DESCRIPTION OF INSTRUMENTS

Instrumentation. The following are the tests used to measure reading and arithmetic achievement, intellectual level, perceptual-motor development, and socioeconomic level.

I. Wide Range Achievement Test (WRAT) (Jastak & Jastak, 1965)

Reading and Arithmetic, Level I, of the WRAT consists of the following tasks:

Reading: 1. At the pre-reading level:

- a) Naming two letters in previously written or printed name
- b) Identifying 10 letters by form
- c) Naming 13 letters of the alphabet

2. At the reading level:

- d) Reading and pronouncing 75 words

Arithmetic: 1. The oral part of the subtest consists of:

- a) Counting 15 dots
- b) Reading 5 digits
- c) Showing 3 and 8 fingers
- d) Telling which number is more: 9 or 6;
42 or 28

2. The written part consists of 43 computation problems

The total scores for reading and arithmetic (raw scores) can be converted to any of the three types of derived score: grade level, standard score, percentile rank. The standard score adjusts for the chronological age of the subject, which is computed on a three-month interval.

Split-half reliability correlations coefficients range from .92 to .98 for reading (and spelling) tests and from .85 to .92 for the arithmetic test. The correlation between the WRAT and the Weschler Intelligence Scale for Children (at 5-7 year levels) for Full Scale I.Q., is: reading .60, spelling .71, and arithmetic .77. Reliability studies on the WRAT indicate correlation coefficients of +.78 to +.88 on various measures (WRAT MANUAL, 1965).

II. Peabody Picture Vocabulary Test (PPVT) (Dunn, 1965) will be used as the instrument to measure intellectual level. The PPVT is an untimed test, administered in 15 minutes or less with 3 practice and 150 test plates, with four stimulus pictures on each test plate. There are two test forms, Form A and Form B. Form A will be used in the pre-test condition and Form B at the post-test condition. The examiner reads the stimulus word, and the subject responds by pointing to, giving the number of, or otherwise indicating the picture best illustrating the word. The total score (raw score) can be converted to any of three types of derived score: percentile rank, mental age, or standard deviation I.Q. with a mean of 100 and a standard deviation of 15. Correlations with Stanford-Binet mental ages are in the order of high 70's and low 80's. With the Weschler Intelligence Scale for Children (WISC), I.Q. correlations run in the high 70's and low 80's. (Reviewed by Lyman, H. B., in Buros' 1965 edition.) A

coefficient of .88 for test-retest stability was reported for this test (Moed, Wright & James, 1963).

- III. The Bender-Gestalt Test for Young Children (Koppitz, 1964) will be used to obtain quantified score statuses on perceptual-motor maturation of the children in the study. The Bender-Gestalt needs little introduction. A widely used clinical test, it consists of nine figures which are presented one at a time and which the subject is asked to copy on a blank piece of paper. The Bender-Gestalt has been used by clinicians as a projective technique, a test for diagnosing brain injury, a test for intelligence for retarded individuals and as a test of school achievement for retarded pupils. In this study, it will be used as a visual-motor developmental measurement, as originally designed by Dr. Lauretta Bender in 1938. Koppitz's developmental "Bender Scoring System" consists of 30 mutually exclusive scoring items which are scored as either present or absent. All scores are added into a composite score. Thus, a child could theoretically receive a composite score of 30. Since the Bender Test is scored for errors, a high score indicates a poor performance while a low score reflects a good performance. The Developmental Scoring System reports high scorer reliability (range .88 to .96); high test score reliability (test-retest reliability) and significant ability to differentiate between high and low achievers (Koppitz,

1964). These measurements were validated against kindergarten and primary grade students.

- IV. Warner, Meeker and Eell's Scale (1957) for the measurement of socioeconomic status will establish "middle-classness" for purposes of this study. The score equivalents of 23 to 50 represent upper-middle to lower-middle-class statuses, respectively. A more specific breakdown of the middle-classes by Warner, Meeker and Eell are as follows:

<u>Weighted Totals of Ratings</u>	<u>Social-Class Equivalents</u>
23-33	Upper-Middle Class
34-37	Indeterminate or Middle-Middle Class
38-50	Lower-Middle Class

While a rating of 40 to 50 on their scale is still within the "middle-class" categories, the writer will eliminate all children who rank over 40 points. By not using any children with a 40 plus rating, the possibilities of including an upper-lower class child into the sample is negligible. Rating will be obtained on occupation, dwelling area, and source of income. Warner, Meeker and Eell's "Index of Status Characteristics" is based upon ratings on occupation, source of income, house type, and dwelling area. They state, "If the data for any one of these four ratings are lacking, the other three should be computed. If the data for two of the four are lacking, no index should be attempted

(Warner, Meeker and Eell, 1957, p. 122)." They provide an "adjusted weights" table, which follows below, to secure a "weighted total" that is "comparable to that secured from four weighted products (Warner, Meeker and Eell, 1957, p. 124)."

Status Characteristic	Weights To Be Used If All Ratings Available	Weights To Be Used If Ratings On One Characteristic Missing			
		Occupation Missing	Source of Income Missing	House Type Missing	Dwelling Area Missing
Occupation	4	-	5	5	5
Source of Income	3	5	-	4	4
House Type	3	4	4	-	3
Dwelling Area	2	3	3	3	-

APPENDIX M

STATISTICAL MODELS FOR THE ANALYSIS OF DATA

$READING_POST(I, J, K, L) = \mu + SEX(I) + SOCIAL_LEVEL(J) + TYPE_OF_PRE_SCHOOL_EXPERIENCE(K) + YEARS_OF_PRE_SCHOOL_EXPERIENCE(L) +$
 $TXS(K, I) + TXS_E(J) + INT(I, J, K, L) +$
 $AGE_EFFECT(I, J, K, L) + READ_PRE_MEAN(I) +$
 $AGE(I, J, K, L) - I \cdot C - E$

READING_POST(I, J, K, L) IS NORMALIZED POST TEST SCORE FOR THE I TH INDIVIDUAL WITHIN THE J TH SEX, K TH SOCIAL-ECONOMIC LEVEL, AND L TH YEAR OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE. AGE IS GIVEN FOR ALL INDIVIDUALS NORMALIZED POST TEST READING SCORES. SEX(I) IS THE EFFECT OF THE I TH SEX.

1 FOR MALE
 2 FOR FEMALE
 SOCIAL_ECONOMIC_LEVEL(J) IS THE EFFECT OF J TH SOCIAL-ECONOMIC GROUP

1 LOW GROUP (38 - 50)
 2 MID GROUP (51 - 67)
 3 HIGH GROUP (68 - 83)

TYPE_OF_PRE_SCHOOL_EXPERIENCE(K) IS EFFECT OF K TH TYPE OF PRE-SCHOOL EXPERIENCE

1 NO FORMAL PRE-SCHOOL EXPERIENCE
 2 FORMAL PRE-SCHOOL EXPERIENCE
 YEARS_OF_PRE_SCHOOL_EXPERIENCE(L) IS THE EFFECT OF NUMBER OF YEARS OF FORMAL PRE-SCHOOL EXPERIENCE

1.1 TO FORMAL PRE-SCHOOL EXPERIENCE
 2.1 ONE YEAR OF FORMAL PRE-SCHOOL EXPERIENCE (1 TO 9.0)
 2.2 TWO YEARS OF FORMAL PRE-SCHOOL EXPERIENCE (10 TO 18.0)
 2.3 THREE YEARS OF FORMAL PRE-SCHOOL EXP. (19 TO 27.0)

TXS(K, I) IS INTERACTION EFFECT OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE AND THE I TH SEX
 TXS-E(K, J) IS THE INTERACTION EFFECT OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE AND THE J TH SOCIAL-ECONOMIC GROUP

INT(I, J, K, L) IS STAT. ERROR TERM FOR THIS STUDY - I.E. THE I TH INDIVIDUAL WITHIN THE J TH SEX, K TH SOCIAL-ECONOMIC LEVEL, AND L TH YEAR OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE

B1 IS PARTIAL REGRESSION COEFFICIENT FOR THE NORMALIZED PRE TEST READING SCORES WHICH ARE USED AS A COGNITIVE VARIABLE

(READING_PRE(I, J, K, L) - READ_PRE_MEAN) IS THE DEVIATION FROM THE MEAN OF NORMALIZED PRE-TEST READING SCORES FOR THE I TH INDIVIDUAL WITHIN THE J TH SEX, K TH SOCIAL-ECONOMIC LEVEL, AND L TH YEAR OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE

B2 IS THE PARTIAL REGRESSION COEFFICIENT FOR NORMALIZED I.E. SCORES WHICH ARE USED AS A COGNITIVE VARIABLE

(I.E.(I, J, K, L) - I.E._MEAN) IS THE DEVIATION FROM THE MEAN OF NORMALIZED I.E. SCORES FOR THE I TH INDIVIDUAL WITHIN THE J TH SEX, K TH SOCIAL-ECONOMIC LEVEL, AND L TH YEAR OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE

AND I TH YEAR OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE

$$\begin{aligned} & \text{ANITH} \cdot \text{POST}(1, J, K, L, M) = \text{EAT} + \text{SEX}(1) + \text{SOCIAL} \cdot \text{EDUCATION} \cdot \text{LEVEL}(1) + \\ & \text{TYPE} \cdot \text{OF} \cdot \text{PRE-SCHOOL} \cdot \text{EXPERIENCE} \cdot \text{QD}(4) + \text{YEARS} \cdot \text{OF} \cdot \text{PRE-SCHOOL} \cdot \text{EXPERIENCE} \cdot \text{QD}(K, L) + \\ & \text{IXS}(1, 1) + \text{IXS} - \text{E}(K, J) + 1 \cdot \text{D}(1, 1, K, L, 1) + \\ & \text{AIX} \cdot (\text{ANITH} \cdot \text{PRE}(1, J, K, L, M) - \text{ANITH} \cdot \text{PRE} \cdot \text{PREV}) + \\ & \text{PRE}(1, 0, 1, J, K, L, 1) - 1 \cdot \text{PREV} \end{aligned}$$

29-11

AVTH. POST (J. K. L. U.) IS NORMALIZED POST TEST SCORE FOR THE A IN INDIVIDUAL WITHIN THE I IN SEX, J IN SOCIAL-ECONOMIC LEVEL, AND I IN YEARS OF LIFE K IN TYPE OF PRE-SCHOOL EXPERIENCE. SEVEN IS GIVEN TO ALL INDIVIDUALS WHO OBTAINED POST TEST ABILITY SCORES SEX (I) IS THE EFFECT OF I IN SEX

TYPE OF PRE-SCHOOL EXPERIENCE(K) IS EFFECT OF K IN TYPE OF PRE-SCHOOL EXPERIENCE(K)

1 NO BUREAU PRE-SCHOOL EXPERIENCE
2 BUREAU PRE-SCHOOL EXPERIENCE
3 BUREAU PRE-SCHOOL CHG(7) IS THE EFFECT OF OTHER OF YEARS OF
BUREAU PRE-SCHOOL EXPERIENCE

2,1 ONE YEAR OF POSTAL PRE-SCHOOL EXPERIENCE (1 TO 9 MO.)	2,2 TWO YEARS OF POSTAL PRE-SCHOOL EXPERIENCE (10 TO 18 MO.)	2,3 THREE YEARS OF POSTAL PRE-SCHOOL EXP.	(19 TO 27 MO.)	TXS(K,I) IS INTERACTION EFFECT OF THE K TYPE OF PRE-SCHOOL EXP=71	AND THE I IN SEX
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100-10679-10000

[illegible]

BT IS PARTIAL REGRESSION COEFFICIENT FOR THE NORMALIZED PRE TEST

1. The following information was obtained from the review of the records of the Department of Education, State of New York, for the year 1964-1965:

SCORES WHICH WERE USED AS A CORRELATION VARIABLE
((1.0, -1.0, 0.0, -1.0) IS THE DEVILION FOR THE

MEAN OF ADJUSTED I. Q. SCORES FOR THE 11 INDIVIDUALS WITH THE 1 TO 5 SEX, 4 TO SOCIAL-ECOLOGIC LEVEL, AND 7 TH YEAR OF THE 3 TYPE OF PRE-SCHOOL EXPERIENCE

$PEC_INTER_POST(I, J, K, L) = SEX + SEX(I) * SOCIAL_ECONOMIC_LEVEL(J)$
 $TYPE_OF_PRE_SCHOOL_EXPERIENCE_CH(N) + YEAR_OF_PRE_SCHOOL_EXPERIENCE_CH(K, L) +$
 $TXS(I, J, K, L) + TXS_S(I, J, K, L) + TXS_S(I, J, K, L) +$
 $SEX(1) * SEX(I, J, K, L) - PEC_INTER_PRE_BEAN +$
 $SEX(1) * SEX(I, J, K, L) - I(1) * SEX(1)$

SAMPLE

$PEC_INTER_POST(I, J, K, L)$ IS NORMALIZED POST TEST SCORE FOR THE I TH INDIVIDUAL WITHIN THE J TH SEX, K TH SOCIAL-ECONOMIC LEVEL, AND L TH YEAR OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE. $SEX(1)$ IS THE EFFECT THE I TH SEX.

1 FOR MALE
 2 FOR FEMALE

$SOCIAL_ECONOMIC_LEVEL(J)$ IS THE EFFECT OF J TH SOCIAL-ECONOMIC GROUP

1 LOW GROUP (38 - 50)
 2 MID GROUP (34 - 37)
 3 HIGH GROUP (23 - 33)

$TYPE_OF_PRE_SCHOOL_EXPERIENCE_CH(K)$ IS EFFECT OF K TH TYPE OF PRE-SCHOOL EXPERIENCE

1 NO PRE-SCHOOL EXPERIENCE

2 FORMAL PRE-SCHOOL EXPERIENCE

$YEAR_OF_PRE_SCHOOL_EXPERIENCE_CH(K, L)$ IS THE EFFECT OF NUMBER OF YEARS OF

FORMAL PRE-SCHOOL EXPERIENCE

2,1 ONE YEAR OF FORMAL PRE-SCHOOL EXPERIENCE (1 TO 9 10%)

2,2 TWO YEARS OF FORMAL PRE-SCHOOL EXPERIENCE (10 TO 19 20%)

2,3 THREE YEARS OF FORMAL PRE-SCHOOL EXP. (19 TO 27 40%)

$TXS(K, I)$ IS INTERACTION EFFECT OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE AND THE I TH SEX

$TXS_E(K, J)$ IS THE INTERACTION EFFECT OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE AND THE J TH SOCIAL-ECONOMIC GROUP

$IND(I, J, K, L)$ IS STAT. IDENT. FOR THIS STUDY - I.E. THE I TH INDIVIDUAL WITHIN THE J TH SEX, K TH SOCIAL-ECONOMIC LEVEL,

AND L TH YEAR OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE

61 IS PARTIAL REGRESSION COEFFICIENT FOR THE NORMALIZED POST TEST

PRE-TEST SCORES WHICH ARE USED AS A CORRELATIVE VARIABLE

$(PEC_INTER_PRE(I, J, K, L) - PEC_INTER_PRE_BEAN)$ IS THE DEVIATION FROM

THE MEAN OF NORMALIZED PRE-TEST SCORES FOR THE K TH

INDIVIDUAL WITHIN THE J TH SEX, K TH SOCIAL-ECONOMIC LEVEL,

AND L TH YEAR OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE

62 IS THE PARTIAL REGRESSION COEFFICIENT FOR NORMALIZED I. O.

SCORES WHICH ARE USED AS A CORRELATIVE VARIABLE

$(I. O. (I, J, K, L) - I. O. (MEAN))$ IS THE DEVIATION FROM THE

MEAN OF NORMALIZED I. O. SCORES FOR THE K TH

INDIVIDUAL WITHIN THE J TH SEX, K TH SOCIAL-ECONOMIC LEVEL,

AND L TH YEAR OF THE K TH TYPE OF PRE-SCHOOL EXPERIENCE

APPENDIX N

SUMMARY TABLES FOR ANALYSIS OF VARIANCE WITHOUT
THE ADJUSTMENTS FOR PRE-TEST SCORES AND
I.Q. AS CONCOMITANT VARIATES

TABLE 1

Analysis of Variance Table for Pre-Test Scores
in Reading by Socioeconomic Middle-Class Levels
(SE), Sex (S), Intelligence (IQ), Preschool Ex-
perience or no Preschool Experience (PE/NPE),
Years of Preschool Experience (Y) and Interactions.

Source	df	MS	F
SE	2	1099.68	19.60**
S	1	323.00	5.75*
IQ	2	1815.37	32.35**
PE/NPE	1	1456.87	25.96**
Y	2	1.43	.02 NS
PE/NPE X SE	2	41.87	.74 NS
PE/NPE X S	1	56.50	1.00 NS
PE/NPE X IQ	2	167.25	2.98 NS
Error	92	56.10	

TOTAL 105

*p < .05

**p < .01

TABLE 2

Analysis of Variance Table for Pre-Test Scores in Arithmetic by Socioeconomic Middle-Class Levels (SE), Sex (S), Intelligence (IQ), Preschool Experience or No Preschool Experience (PE/NPE), Years of Preschool Experience (Y) and Interactions

Source	df	MS	F
SE	2	1878.00	19.35**
S	1	187.00	1.92 NS
IQ	2	2733.50	28.16**
PE/NPE	1	2013.00	20.74**
Y	2	33.00	.34 NS
PE/NPE X SE	2	39.50	.40 NS
PE/NPE X S	1	7.00	.07 NS
PE/NPE X IQ	2	34.00	.35 NS
Error	92	97.04	

TOTAL 105

**p < .01

TABLE 3

Analysis of Variance Table for Pre-Test Scores in
 Perceptual-Motor Skills by Socioeconomic Middle-Class
 Levels (SE), Sex: (S), Intelligence (IQ), Preschool
 Experience or No Preschool Experience (PE/NPE), Years
 of Preschool Experience (Y) and Interactions

Source	df	MS	F
SE	2	1565.00	5.92**
S	1	547.00	2.07 NS
IQ	2	2955.00	11.19**
PE/NPE	1	2659.00	10.07**
Y	2	351.00	1.32 NS
PE/NPE X SE	2	334.50	1.26 NS
PE/NPE X S	1	90.00	.34 NS
PE/NPE X IQ	2	886.00	3.35*
Error	92	264.01	

TOTAL 105

*p < .05

**p < .01

TABLE 4

Analysis of Variance Table for Post-Test Scores in Reading by Socioeconomic Middle-Class Levels (SE), Sex (S), Intelligence (IQ), Preschool Experience or No Preschool Experience (PE/NPE), Years of Preschool Experience (Y) and Interactions

Source	df	MS	F
SE	2	1553.00	16.60**
S	1	224.00	2.39 NS
IQ	2	1805.00	19.29**
PE/NPE	1	1406.00	15.03**
Y	2	169.00	1.80 NS
PE/NPE X SE	2	98.50	1.05 NS
PE/NPE X S	1	201.00	2.14 NS
PE/NPE X IQ	2	80.00	.85 NS
Error	92	93.53	

TOTAL 105

**p < .01

TABLE 5

Analysis of Variance Table for Post-Test Scores in Arithmetic by Socioeconomic Middle-Class Levels (SE), Sex (S), Intelligence (IQ), Preschool Experience or No Preschool Experience (PE/NPE), Years of Preschool Experience (Y) and Interactions

Source	df	MS	F
SE	2	1239.50	12.25**
S	1	8.00	.07 NS
IQ	2	1577.00	15.59**
PE/NPE	1	1072.00	10.60**
Y	2	39.50	.39 NS
PE/NPE X SE	2	58.00	.57 NS
PE/NPE X S	1	140.00	1.38 NS
Error	92	101.11	

TOTAL 105

*p < .05

**p < .01

TABLE 6

Analysis of Variance Table for Post-Test Scores in
 Perceptual-Motor Skills by Socioeconomic Middle-
 Class Levels (SE), Sex (S), Intelligence (IQ), Pre-
 school Experience or No Preschool Experience (PE/
 NPE), Years of Preschool Experience (Y) and Inter-
 actions

Source	df	MS	F
SE	2	1045.50	4.56*
S	1	150.00	.65
IQ	2	1381.00	6.03**
PE/NPE	1	1970.00	8.60**
Y	2	340.00	1.48
PE/NPE X SE	2	410.50	1.79
PE/NPE X S	1	16.00	.06
PE/NPE IQ	2	477.50	2.08
Error	92	228.83	

TOTAL 105

*p < .05

**p < .01

TABLE 7

Analysis of Variance Table of Pretest-Posttest Score Differences in Reading by Socioeconomic Middle-Class Levels (SE), Sex (S), Intelligence (IQ), Preschool Experience or No Preschool Experience (PE/NPE), Years of Preschool Experience (Y), and Interactions

Source	df	MS	F
SE	2	45.40	.67 NS
S	1	9.01	.13 NS
IQ	2	153.30	2.27 NS
PE/NPE	1	.46	.006 NS
Y	2	152.72	2.26 NS
PE/NPE X SE	2	234.14	3.46*
PE/NPE X S	1	44.55	.66 NS
PE/NPE X IQ	2	56.74	.84 NS
Error	92	67.50	

TOTAL 105

*p < .05

TABLE 8

Analysis of Variance Table of Pretest-Posttest Score Differences in Arithmetic by Socioeconomic Middle-Class Levels (SE), Sex (S), Intelligence (IQ), Preschool Experience or No Preschool Experience (PE/NPE), Years of Preschool Experience (Y), and Interactions

Source	df	MS	F
SE	2	78.37	.73 NS
S	1	119.39	1.12 NS
IQ	2	169.81	1.59 NS
PE/NPE	1	147.40	1.38 NS
Y	2	87.90	.82 NS
PE/NPE X SE	2	25.68	.24 NS
PE/NPE X S	1	87.08	.81 NS
PE/NPE X IQ	2	16.94	.15 NS
Error	92	106.46	
TOTAL	105		

TABLE 9

Analysis of Variance Table of Pretest-Posttest Score Differences in Perceptual-Motor Skills by Socioeconomic Middle-Class Levels (SE), Sex (S), Intelligence (IQ), Preschool Experience or No Preschool Experience (PE/NPE), Years of Preschool Experience (Y), and Interactions

Source	df	MS	F
SE	2	165.93	1.19 NS
S	1	123.81	.88 NS
IQ	2	679.53	4.88**
PE/NPE	1	51.66	.37 NS
Y	2	127.44	.91 NS
PE/NPE X SE	2	31.71	.22 NS
PE/NPE X S	1	29.88	.21 NS
PE/NPE X IQ	2	33.51	.24 NS
Error	92	139.14	

TOTAL 105

**p < .01