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ABSTRACT

This evaluation of the New York State Experimental Prekindergarten (PreK) Program was designed to investigate the extent to which efforts to enhance program continuity through staff development activities produced lasting effects on children's cognitive and noncognitive development. Three children in each of seven of the 48 PreK school districts in New York were selected for intensive study. For each child, a team was formed consisting of the child's past, present, and future teachers, as well as nonteaching staff members and the building principal. The team worked together as the child moved from PreK into kindergarten and then into the first grade. Together they focused on developing skills in observing children, recording observations, collecting meaningful data from various sources, reviewing data, and using data for planning instruction. Generally, results indicate that, on two different cognitive measures, children who had experienced greater continuity in their educational programs during this period scored higher than did children who had experienced less continuity. It is concluded that these findings provide evidence of the effectiveness of activities designed to strengthen continuity in children's educational experiences when those activities follow a developmental program. (Author/RH)

EFFECTS OF CONTINUITY OF LEARNING EXPERIENCES ON CHILDREN'S COGNITIVE PERFORMANCE

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EFFECTS OF CONTINUITY OF LEARNING EXPERIENCES ON CHILDREN'S PERFORMANCE

A concern which policy makers and educators have expressed about preschool education programs is whether positive effects of the programs, regularly reported in research studies, are maintained over time (Bronfenbrenner, 1974; Wolff and Stein, 1966; and Westinghouse Learning Corporation, 1969). Accompanying this concern is the need to determine the conditions under which preschool programs are most likely to have positive long-range effects. These concerns were addressed in an evaluation of experimental prekindergarten programs in New York State.

The New York State Experimental Prekindergarten (PreK) Program operates in 48 local school districts and three Boards of Cooperative Educational Services. Each year the program enrolls approximately 6,500 children of whom about 5,000 are four years old. In 1975, the New York State Education Department began a longitudinal evaluation of the program. One of six major questions posed for the evaluation was:

> Can program components or variations be identified which contribute to greater success of particular programs in producing lasting increases in the level of cognitive and other development? (State Education Department, January 21, 1975)

To answer this question, the evaluation was designed to investigate the impact which continuity in the children's programs might have in producing lasting effects on the children's cognitive and noncognitive

development. This strategy is consistent with the concern of others in the field of early childhood education. Zigler (1978, p. 5), for example, in reviewing the impact of Head Start, describes two kinds of continuity which are important for producing long-term effects: (1) continuity between the preschool program and the child's home; and (2) continuity between the preschool program, kindergarten, and the elementary grades. The validity of the first of these was demonstrated in an earlier study done by this office on effects of parent involvement on children's performance (State Education Department, August 31, 1979). To assess the validity of the second was the purpose of the investigation described here.

Another investigator summarizes the need in this way: "We must . . . align the goals of programs for infants, preschoolers, and early elementary school-aged pupils so that such programs become components of an integrated, consistent plan for educating young children" (Weinberg, 1979, p. 915).

Increasing Continuity

To investigate the relation of continuity to performance of the children, seven districts were identified for study in depth. These districts had exhibited commitment to developing program continuity or were judged to have the greatest potential for developing it. An attempt was made to increase the degree of continuity in these districts as well as to identify its effects on long-term learning.

Three children were selected in each district for intensive study. For each child, a team was formed consisting of the child's past, present, and future teachers as well as nonteaching staff members and the building principal. The team worked together as the child moved from PreK into kindergarten and then into the first grade. The team focused on developing their skills in observing children; recording their observations; collecting meaningful data from interviews, parent conferences, school records, and samples of children's work; reviewing data; and using data for planning instruction.

It was found that after participating in staff development teachers were better able to: (1) capitalize on children's strengths and interests, (2) provide varied experiences to meet individual children's needs; (3) make appropriate materials accessible to children; (4) relate present and past learning; (5) integrate current learning experiences; (6) communicate with parents and involve them in the education of their children; and (7) make effective use of colleagues and specialists.

The processes and the team structure were based on the premise that by studying a small group of children, the teachers and the teams could increase the degree of continuity for all the children they serve. It was to test the validity of this premise that the present study was designed.

Results Without Considering Continuity

Effects of the prekindergarten program on two cognitive measures at the end of the first grade were first examined without considering the degree of continuity of different children. An analysis of covariance approach was used.

The subjects were 1,078 former prekindergarten children and 39 control-group children.

Two measures of cognitive performance were used as criteria: (1) the Cognitive Abilities Test (Thorndike, Hagen, and Lorge, 1968); and (2) the Peabody Picture Vocabulary Test (Dunn, 1965). Control variables were: (1) child's age; (2) level of education of the child's mother; (3) income of the child's family; (4) hours parents were involved in the program; (5) number of hours the child attended prekindergarten; (6) PreK pretest score on the Walker Readiness Test (Walker, 1969); (7) PreK pretest score on the Cooperative Preschool Inventory (Educational Testing Service, 1970); and (8) PreK pretest score on the Peabody Picture Vocabulary Test (Dunn, 1965).

No difference was found between the former PreK children and the control-group on the Cognitive Abilities Test (CAT). On the Peabody, the former PreK children who had a combination of low Walker pretest scores and high Cooperative pretest scores were found to exceed the control group; at other levels of the pretests, the control group equalled or surpassed the former PreK children. For former PreK children, those whose parents spent more time involved in the program tended to score higher on the Peabody.

Effects of Continuity

To study effects of continuity, the former PreK children were divided into three groups. Thus, in this phase of the analysis, four groups were studied:

1. Intensive Study group, made up of former PreK children who were the subjects of an intensive prooess of study and documentation designed to increase continuity. These children were in the seven districts designated as indepth district. This group was composed of 20 children.

2. Indepth group, made up of the other former PreK children in the indepth districts who were not studied as intensively as the children in the first group. However, because they went to the same schools and were taught by the same teachers as the intensive study group, it was anticipated that the processes used with the intensive study group would increase continuity for them as well. This group contained 344 children.

3. Non-indepth group, made up of 807 former PreK children in districts not involved in the indepth study.

4. Control group, made up of 40 children in districts not involved in the indepth study and who had not participated in PreK.

A multiple linear regression approach was used to test hypotheses of interest. Two comparisons between groups were viewed as critical. First, if the activities to promote continuity are to have a broad effect, they must generalize to other children beyond the intensive study group. Therefore, a finding of no difference between the intensive study group and the indepth group would be viewed as desirable, provided a difference is found between the indepth group and the non-indepth group.

Second, the difference between the indepth group and the non-indepth group appears to offer the best indication of effects of continuity, since both groups attended PreK but only the indepth group was in districts where intensive efforts were made to improve continuity.

Effects of the combinations of treatments were examined by comparing each pair of groups on the two criteria. First, the groups were compared on the CAT administered at the end of the first grade. Control variables were: (1) mother's education; (2) family income; and (3) scores on each of the PreK pretests.

Intercorrelations among variables are shown in Table 1. Means and standard deviations are shown in Table 2. (Tables 1 and 2 here.)

Results of the analysis are presented in Table 3. Two-factor interaction was found to be present and identified as an interaction between the Cooperative PreK pretest and the Peabody PreK pretest. Family income was found to be related to the criterion while mother's education was not.

As anticipated, no difference was found between the intensive study group and the indepth group. The intensive study group and the indepth group scored significantly higher on the CAT than the non-indepth group. No differences were found between the control group and any of the other groups.

(Table 3 here)

A second analysis was carried out using the Peabody as the criterion. Intercorrelations among the variables are shown in Table 1.

Results of the analysis are presented in Table 4. It can be seen that family income, mother's education, Cooperative PreK pretest scores and Peabody PreK pretest scores were related to the criterion. No two-factor interaction involving family income and mother's education was found. The Walker PreK pretest was not significantly related to the criterion. Finally, regression of the four groups on the criterion was found to be homogeneous.

No difference was found between the intensive study group and the indepth group. A difference was found between the indepth group and the non-indepth group. No other significant differences were found between any of the groups.

(Table 4 here)

Summary and Conclusions

On two different cognitive measures, children who had experienced greater continuity in their educational programs between PreK and the end of grade one exceeded children who had experienced less continuity. These findings provide evidence of the effectiveness of activities to strengthen continuity in children's educational experiences when those activities follow a developmental PreK program.

It should be pointed out that the results do not say anything about the effects of program continuity on children who had not attended PreK. To draw such conclusions, it would have been necessary to study a group which experienced continuity, as the intensive study group and the indepth group did, but which had not attended PreK. Data on children meeting these requirements were not available. However, it seems a reasonable hypothesis that the continuity process is likely to have positive effects on all children.

Since a large majority of the children enrolled in the Experimental Prekindergarten Program are from low socioeconomic backgrounds, the results of this study do not provide direct evidence of the effects of continuity on children from the general population.

These findings do not provide direct information on the effects of program continuity on children who attended different kinds of PreK programs. The effects were found for continuity in conjunction with a developmental PreK program.

Future studies, not proposed in the original prekindergarten evaluation plan (State Education Department, January 21, 1975), could be conducted to answer questions about effects of program continuity in the situations mentioned above.

In spite of these limitations, the results of the present study seem unambiguous: if children who have had PreK move into a school which does not closely relate the program of its kindergarten and primary grades to what the children have already experienced, the prospect of maintaining the effects of PreK is unpromising. However, if there is a concerted effort to build on the PreK experience as the children progress through kindergarten and first grade, the positive effects of PreK can be maintained.

Zigler put it succintly: "We can never inoculate children in one year against the ravages of deprivation; there must be continuity" (Zigler, 1978, p. 5).

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Table 1
Intercorrelations of Predictor and Criterion Variables

	2	3	4	5	6	7
1. Walker Pretest	.62	.50	.17	.17	.36	.53
2. Cooperative Pretest		.64	.27	.26	.48	.61
3. Peabody Pretest			.39	.26	.57	.59
4. MOED				.21	.31	.27
5. INCOME					.27	.28
6. Peabody Grade 1						.59
7. CAT Grade 1						

Table 2
Means and Standard Deviations of
Criterion and Control Variables

Variable	Study n=20		Indepth n=332		Non-Indepth n=773		Control n=40	
	M	S.D.	M	S.D.	M	S.D.	M	S.D.
Grade 1 Criteria								
CAT	57.6	8.9	55.1	8.8	51.8	9.5	57.8	9.1
Peabody	62.9	9.2	62.3	7.9	59.2	10.3	64.0	12.3
PreK Control Variables								
Walker	26.3	7.4	24.7	9.4	24.2	10.0	30.2	9.6
Cooperative	40.7	11.3	39.7	11.6	36.3	13.0	44.2	10.4
Peabody	41.2	14.7	37.6	14.4	35.1	16.7	47.6	11.7
Mother's education	11.7	1.5	10.8	2.7	10.8	2.6	12.1	1.9
Income	60.9	26.2	71.1	34.1	71.9	42.2	100.8	48.8

Table 3

Multiple Regression Results for Studying Effect of Continuity on the ~~California Achievement Test~~ Cognitive Ability Test

Independent Variables (in order of testing for deletion)	% Variance accounted for[a]	F	df	P
Interaction among pretests	.005	2.99	12/1182	.00
Homogeniety of Regression	.009	1.22	17/1182	.24
CXP interaction	.008	18.4	1/1199	.00
WXP and WXG interaction	.002	2.5	2/1199	.08
Mother's education	.001	2.4	1/1201	.12
Income	.0075	17.81	1/1201	.00
Study vs. Indepth	.0004	.85	1/1202	.36
Study vs. Non-indepth	.0025	5.90	1/1202	.02
Study vs. Control	.0016	3.79	1/1202	.05
Indepth vs. Non-indepth	.0113	26.90	1/1202	.00
Indepth vs. Control	.0015	3.64	1/1202	.06
Non-indepth vs. Control	.0000	.01	1/1202	.94

[a] % Variance accounted for is the percent of criterion variance that variable accounts for in the presence of all listed variables after all rejected variables above it in the table have been removed.

Table 4
Multiple Regression Results for Studying Effect of Continuity on the Peabody

Independent Variables (in order of testing for deletion)	% Variance accounted for[a]	F	df	P
Income	.0096	18.00	1/1181	.00
Mother's education	.0058	11.00	1/1181	.00
Interaction among pretests	.0018	1.27	12/1181	.23
Walker	.0036	1.700	4/1193	.14
Cooperative	.0117	5.700	4/1193	.00
Peabody	.0764	36.900	4/1198	.00
Homogeniety of Regression	.0034	1.080	6/1197	.37
Study vs. Indepth	.0000	.060	1/1203	.80
Study vs. Non-indepth	.0005	.940	1/1203	.33
Study vs. Control	.0005	.960	1/1203	.33
Indepth vs. Non-indepth	.0095	18.000	1/1203	.00
Indepth vs. Control	.0020	3.800	1/1203	.05
Non-indepth vs. Control	.0000	.090	1/1203	.76

[a] % Variance accounted for is the percent of criterion variance that variable accounts for in the presence of all listed variables after all rejected variables above it in the table have been removed.