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ABSTRACT

This paper summarizes evaluations of 28 preschool intervention programs designed to train parents to prepare their young children for school achievement. Evaluations selected for review were internal assessments by program staffs. The summary is organized around three questions: (1) Do parent training programs affect children's cognitive development and school achievement? (2) Are some programs more effective than others and why? (3) Do programs affect the parents? Parent training included: (1) direct, didactic teaching during home visits, (2) demonstration, with mothers observing teacher-child interaction, and (3) observation in preschool classrooms. Programs reviewed consistently produced significant gains in children's IQ scores, positively affected school performance and influenced parents' behavior and attitudes. Some programs produced greater changes than others, depending upon the emphasis on parent-teacher relationship and the degree of structured activities parents used. Of eight programs carrying out follow-up testing, seven reported positive or significant differences favoring program children over controls. Gains of children in experimental programs were maintained into the elementary school years. Although the most complete data in these evaluations came from IQ tests, there is evidence that parent-training programs affect school achievement as well. (Author/BF)

September 3, 1976

EFFECTIVENESS OF HOME-BASED EARLY EDUCATION PROGRAMS

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In thinking about today's session, I wondered how many symposia, conferences, speeches and papers have been prepared on this topic during the past ten years. The first major program for educational intervention with young children began in 1965; experimental local programs began several years earlier. A great deal of money has been spent, thousands of X squares and t tests have been computed. It is discouraging to realize that we still know so little about the effect that intervention programs have had upon the children and adults that participated in them.

We began Operation Head Start with a spirit of enthusiasm, idealism and social reform, but with little comprehension of the task we had undertaken. We overestimated our knowledge and underestimated the problems to be solved. The first encounter in the war on poverty -- a six weeks summer campaign -- was, in terms of results, a disaster, although we did not fully realize it at the time. The initial evaluations were mixed, some follow-up studies showed little effect and the Westinghouse report seemed to confirm the claim of some that early intervention had little, if any, payoff.

Although one reaction to these defeats was to retreat to the university and to undertake more comfortable studies, some of our colleagues continued

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to develop and operate programs, to modify them, and to gather information about their effectiveness. Thanks to them, the accumulation of data about the impact of such programs is beginning to be impressive.

The first evaluations came from programs designed for direct classroom use with children. The emphasis was on the curriculum and on interaction with teachers. Reports from other types of intervention, however, began to suggest that programs were more successful when parents were involved. This raised the possibility that it was not intervention, as such, but the method used that might determine the success of these efforts. At this point our knowledge about the effectiveness of different strategies is incomplete. The results of some intervention programs, however, have convinced some of us that the initial judgment of failure was premature.

This paper is a report of one type of intervention that was continued despite the general pessimism that followed the Westinghouse report. It is a summary of evaluations of programs that attempted to reach children through their parents. More specifically, the paper summarizes the results of twenty-eight programs designed to train parents to prepare their young children for achievement in school. My collaborator on this study was Ms. Barbara Goodson. The results of our work are reported more fully elsewhere.*

The training activities we examined were those designed to instruct parents in techniques for preparing their own young children for school. The twenty-eight programs included in this review employed several different methods. One method of working with parents was direct, didactic teaching

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*Goodson, B. D., and Hess, R. D. The effects of parent training programs on child performance and parent behavior. Stanford, Ca.: Stanford University, School of Education, 1976. (Submitted for publication)

during visits in the home. This approach was used most often in one-to-one sessions between a teacher and a mother. The teacher usually instructed the mother in specific techniques to use with her child. A less didactic method for presenting new teaching strategies was demonstration: Mothers were expected to learn by watching while the teacher interacted with the child. A third method for changing teaching practices was observation in preschool classrooms. By observing trained teachers at work, parents were expected to learn about teaching; by observing their own child, they might gain knowledge about the child's development.

The twenty-eight training programs were identified from several sources: ERIC Clearinghouse, bibliographies, references, and correspondence with staffs of projects or agencies known to be involved in efforts of this kind. Two criteria guided selection. One was the availability of an evaluation; the other was the adequacy of the information on the working details of the program.

The evaluations selected for review were internal assessments, planned and conducted by the staffs of the programs themselves. This summary presents their findings at face value. Since the primary purpose of the intervention was to have an impact on the children involved, the evaluation effort typically had second priority. In some instances, the rigor of the evaluation design was deliberately sacrificed for the benefit of the overall program or for ethical considerations. These constraints, and the limitations imposed by field conditions of this type of research, sometimes resulted in evaluation designs that are less than

ideal. This may not be a serious problem. Jamison, Suppes and Wells (1974), in their review of evaluations of educational innovations, claim that the quality of evaluation designs is uncorrelated with the results. The most convincing evidence from these evaluations comes from the fact that they are replications. The consistency of the repeated findings has a particular significance.

A distinction is made between "program" and "cohort." Some programs included several different groups of children and parents, usually in successive years. These subgroups are thus replications or variations within a single program. In this paper we refer to these substudies as "cohorts."

This summary is organized around three questions. First, do parent training programs have an impact upon children's cognitive development and school achievement? Second, are some of the programs more effective than others and, if so, why? Third, do the programs have an effect upon the parents who participate?

I will discuss these three questions in reverse order, dealing initially with the influence of the programs on the parents themselves.

About half of the twenty-eight project staffs assessed the impact of the training on parents. Outcome data for parents are available only for immediate posttesting; so far, follow-up data have not been reported, although they are being collected in some programs. Such follow-up data on parents are obviously important to indicate whether the programs create a relatively permanent change in the child's home environment and thus offer continuing impact upon the program children and upon other children in the family.

The results are difficult to compare across programs since there are no standardized instruments for measuring changes in parents' behavior

or home environments. Even though a variety of instruments was used in these evaluations, three areas were usually examined: Parent attitudes, parent/child interactions, and home environments.

Of the six programs that assessed change in parental attitudes, five found positive evidence, although the results were not always statistically significant. The two attitudes for which significant changes were most often found were, first, a greater sense of personal control over one's own life, and, second, more flexible attitudes toward the child and his/her development.

Parent training programs apparently also affect the pattern of interaction between parents and children. The verbal behavior of the parents tended to include more support of the child's efforts and to show a more varied and syntatically complex language pattern. Studies of nonverbal behavior found a greater responsiveness on the part of the mothers and more active participation in interactions with the child.

Several evaluations included assessment of the effects of the program upon the home environment. Again, the trends were consistent. The siblings of children in the program seem to have benefitted from the training through a diffusion of effects. The home environments were more likely to include specific resources that are usually correlated with achievement in school.

Although these data are sparse, they have a pattern. Parent training programs do appear to affect the behavior of parents and the resources of the home.

Turning now to the second general question: Do some programs produce greater changes than others? The answer seems to be "Yes." We were

impressed with the variation between programs in magnitude of gains and the consistency of gains within programs. For example, several evaluations included successive years, or cohorts, offering replications of their results. This provides a relatively stable estimate of program impact. One program with four such cohorts showed a mean IQ gain of less than five IQ points on standard tests; another, with six cohorts, showed a mean gain of over 20 IQ points.

We attempted to identify the elements of programs that were related to the degree of impact they had upon children. Five features of the parent participation were selected as potentially important. These were:

1) the emphasis upon training of parents as a part of the total effort;
2) the curricular content of the teaching activities used by parents;
3) The ratio of teachers to parents during training;
4) the degree of structure in the activities parents used with children;
5) the degree of specificity used by teachers in working with parents.

Using descriptions provided by the sponsors, we categorized each program on these five features. We did not have an opportunity to observe programs in action, so these ratings have an unknown relationship to the actual practices of the teachers or the parents. This makes the conclusions obviously tentative.

We found that the five major features of the programs are only modestly related to the magnitude of effects. They do not account for the large differences among programs. Some relationships did appear, however.

First, the more a program concentrates on parents, the more likely it is to produce significant and stable IQ gains for children. Greater effects in immediate and follow-up testing are produced by a one-to-one teacher/parent relationship than are produced when parents are taught as groups. Home visits are especially effective.

Second, the degree of structure in the activities used by parents was positively related to greater program effectiveness.

We found no relationships between the content of the curriculum used by parents (focus on verbal interaction, focus upon sensori-motor development, focus on general cognitive activities) and magnitude of impact on children.

Also, there was no relationship between the degree of specificity in instructing parents and outcome.

We turn now to the most important question: What is the effect of programs on the children?

The handout is intended to provide data touching two aspects of this question. First, do parent training programs produce gains in school-related abilities and, second, if so, are the effects maintained or do they fadeout after the program ends?

The figures in the handout are arranged to show data on each of these points. Figures 1 and 2 offer evidence about short-term gains -- the immediate effects. Figures 3 and 4 show data from long-term, follow-up testing.

First, what about short-term, immediate gains? Figure 1 shows program

First, what about short-term, immediate gains? Figure 1 shows program cohorts grouped by pretest IQ level. The graph in the upper left-hand corner of Figure 1 presents results for thirteen cohorts, identified by capital letters and an arabic number.

G4, in the highest bar of that graph, for example, refers to the fourth cohort of program G. The pretest scores for all cohorts in this part of the figure were between 70 and 80 IQ points. The mean gain for this group was 13.6. The level of gain for each cohort is indicated. P3 and P5, for example, gained between 21 and 30 IQ points; R4 and R7 between 6 and 10 points.

The next cluster in Figure 1 presents gains of cohorts that had mean pretest scores between 80 and 85 IQ points; the third presents gains for cohorts that had pretest scores between 85 and 90; the figure is continued on the next page.

The test data for comparison groups also appear in Figure 1. The comparison groups are clustered into only two categories simply because there are fewer of them and because there is no relationship between initial pretest scores and gain.

In summary, Figure 1 shows the gains of individual program cohorts between beginning and end of the programs and the degree to which these gains are related to level of IQ at the beginning of the intervention.

Another way to examine these data is to combine the several cohorts within each program and compare overall program effectiveness. This comparison is made in Figure 2. Cohorts are averaged to give a mean score for each program. It may be of interest to note that program P, which showed the greatest gains, has six cohorts; program A included eight different

substudies. These are thus replications, not single shot trials. Grouped in this way, the mean pre-post gain across all programs is 9.3 IQ points.

The most general conclusions from these pre-post data are, first, that most of the programs produce gains and, second, comparison groups do not gain on the average, and, third, the children who scored lowest at the beginning of the intervention were likely to benefit most.

The second question about program effectiveness is whether the initial, short-term gains persist. This is the most critical point of the data. The pattern of initial gains followed by fadeout is a familiar one; the future of intervention programs probably will hinge on evidence about their long-term effectiveness.

Moreover, the fact that children who scored lowest on first testing showed greatest gains obviously raises the possibility that the gains are statistical artifacts -- that they are produced by regression to the mean. Follow-up data are essential in an attempt to deal with questions of fadeout and statistical regression.

Eight of the twenty-eight programs carried out follow-up testing. Seven of these reported positive or significant differences favoring program children in testing over varying lengths of time. Two programs carried out follow-up testing four or more years after the end of the program; three conducted follow-up testing two or three years after program end; for three, follow-up data were obtained roughly one year after intervention ended.

Figure 3 presents data on sixteen cohorts for which we have follow-up data during a first phase (around twelve months) and either a second and

third phase which ranges from thirteen to more than forty-eight months after the formal end of the intervention. These were combined because some programs included three follow-up testings, others included only two. Since not all cohorts were tested at both, we took either second or third phase testing, whichever was later. Comparable data for seven comparison cohorts are included in a separate graph.

We draw two conclusions from the data in Figure 3. The first of these is that the gains of children in the experimental programs are maintained into the elementary school years with little fadeout. Second, the comparison groups do not improve in performance during the period of follow-up testing.

The next aspect of the follow-up data is: Do children who gain more also lose more after the program has ended? This question is somewhat independent of level of initial IQ.

The cohorts shown in Figure 4 are grouped by magnitude of gain. The line in the top of the figure indicates changes for cohorts whose initial gain was a mean of 4.5. The second line shows those with a mean gain of 10.5. The bottom line shows those that gained almost 20 points.

We draw two conclusions from these data. The first is that the degree of loss is indeed greater for those who gained most. The second is that the amount of loss is relatively small compared to the gains achieved during the program.

Although the most complete data in these evaluations came from standardized IQ tests, there is evidence that parent training programs also affect achievement in school. Three evaluations included school grades or performance on standardized achievement tests. One example,

data on children in the third grade, showed that none of the control children scored above the 50th percentile on the California Achievement Test, while half of the program children did. Also, 72% of the program children were at their expected grade level by third grade, compared with 60% for controls. Substantially more control children had been assigned to special remedial classes.

In another program, at the end of third grade, 92% of the program children received passing grades while only 60% of control children did so. Twenty-six percent of program children were at or above their expected grade level, compared with 8% for the control group. On achievement tests in reading, arithmetic, and language, more than half the program children scored at or above their expected level; less than 20% of control children did so.

In summary, the programs reviewed here consistently produced significant immediate gains in children's IQ scores and these gains appear to be maintained. The programs also have a positive effect on school performance and influence the verbal behavior, attitudes and teaching behavior of parents. The apparent success of these parent training programs suggest that participation of this type is an important component of early intervention programs.

Although the pattern of gains is impressive, the findings are not complete. We could not identify the origins of the considerable differences among programs; the evaluations were conducted by program staff and are vulnerable to questions raised about self-evaluation; the follow-up data come from a small number of programs; other evaluations with less positive

results may not have been reported to us; and data now being gathered will give more, or less, support to these conclusions. However, the evidence is positive and deserves to be taken seriously.

This symposium on the effectiveness of intervention comes at a very appropriate time. We have outgrown our illusions about working miracles overnight. There will be no quick or easy answers to the question posed by this symposium. There is more reason now than at any previous time to expect that the answer will be that intervention does work. This response is obviously simplistic; perhaps the next more important sign of progress is that we will no longer ask the question in this way. Instead, we will recognize that changes in the environment do affect behavior and that programs can be created to improve the educational opportunity of young children. The question will then be not whether intervention works but whether we want to devote national resources to make it effective.

REFERENCE

Jamison, D., Suppes, P., & Wells, S. The effectiveness of alternative instructional media: A survey. Review of Educational Research, 1974, 44(1), 1-69.

The following figures are taken from a manuscript submitted for publication.[1]

Figure 1: Mean pre-post IQ gains by program cohorts, grouped by pretest IQ level. "Cohort" is a single treatment or comparison group within a program. Letters refer to individual program cohorts. Starred cohorts had not completed the full multiyear intervention programs.

Figure 2: Mean pre-post IQ gains by programs, cohorts combined. Starred cohorts had not completed the full multiyear intervention program.

Figure 3: IQ gains by program cohorts with scores from pre- and posttest, 1st phase follow-up, and 2nd or 3rd phase follow-up, grouped by pretest IQ level. Number of cohorts in each group is indicated in parentheses.

Figure 4: Follow-up changes in IQ level of program cohorts, grouped by level of initial gain. Total number of cohorts in each group and number of cohorts for each data point is indicated in parentheses.

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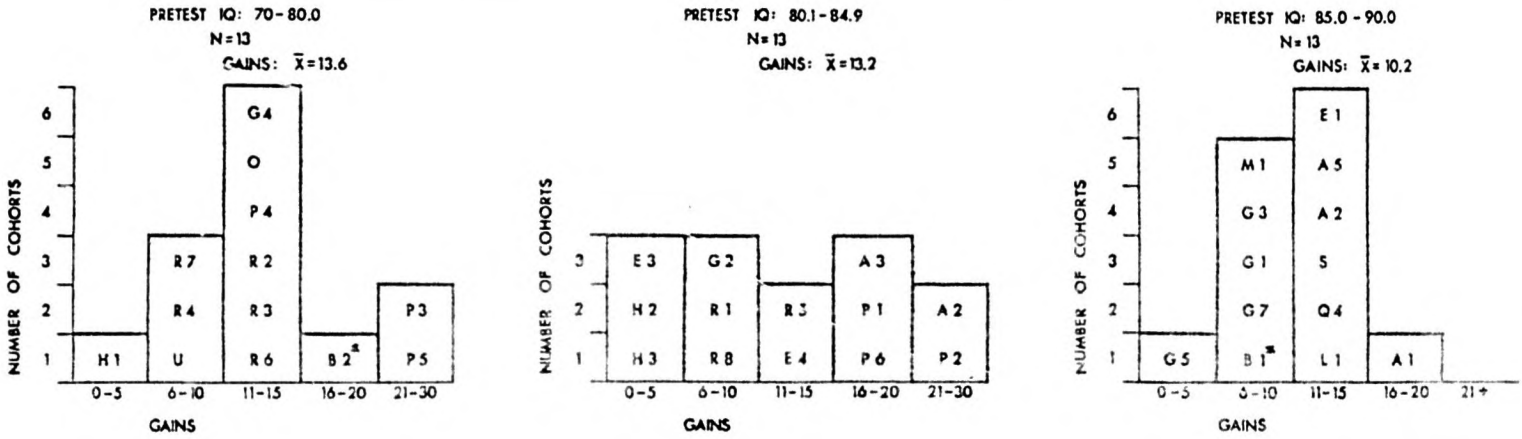
[1] Goodson, B. D., and Hess, R. D. The effects of parent training programs on child performance and parent behavior. Stanford, Ca.: Stanford University, School of Education, 1976. (Submitted for publication)

FIGURE 1. MEAN PRE-POST IQ GAINS BY INDIVIDUAL PROGRAM COHORTS, GROUPED BY PRETEST IQ LEVEL

TREATMENT COHORTS



COMPARISON COHORTS

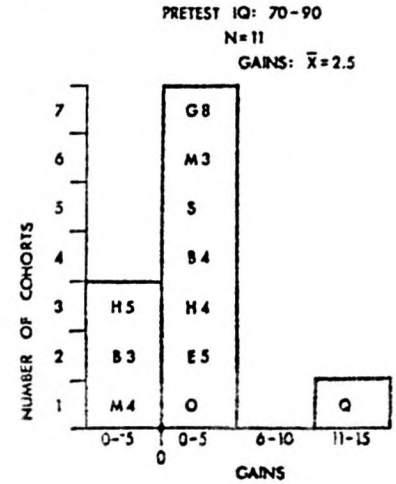
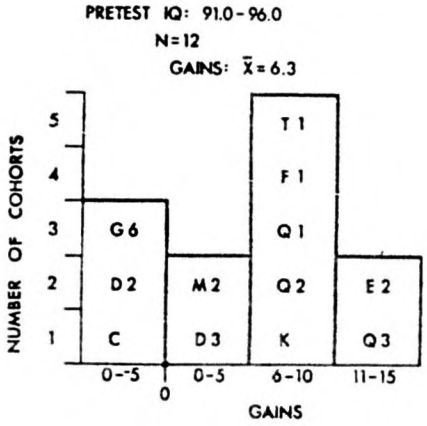
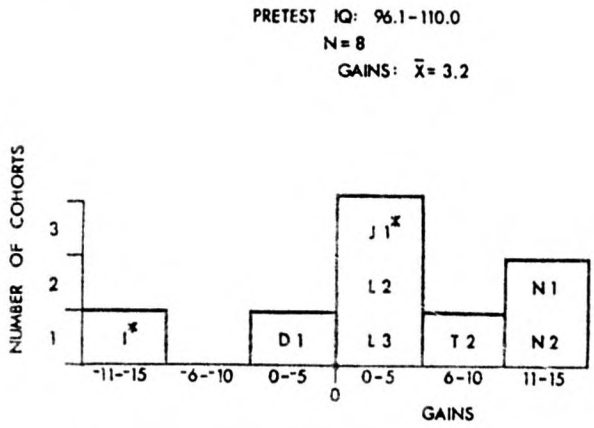


FIGURE 1 (con't). MEAN PRE-POST IQ GAINS BY INDIVIDUAL PROGRAM COHORTS, GROUPED BY PRETEST IQ LEVEL

TREATMENT COHORTS





COMPARISON COHORTS

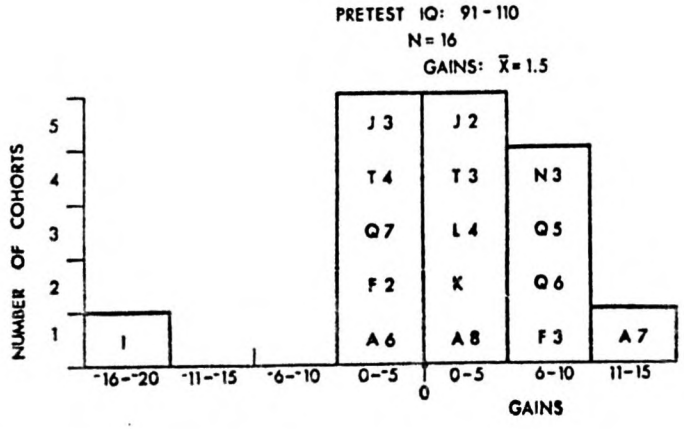


FIGURE 2. MEAN PRE-POST IQ GAINS BY PROGRAMS, COHORTS COMBINED

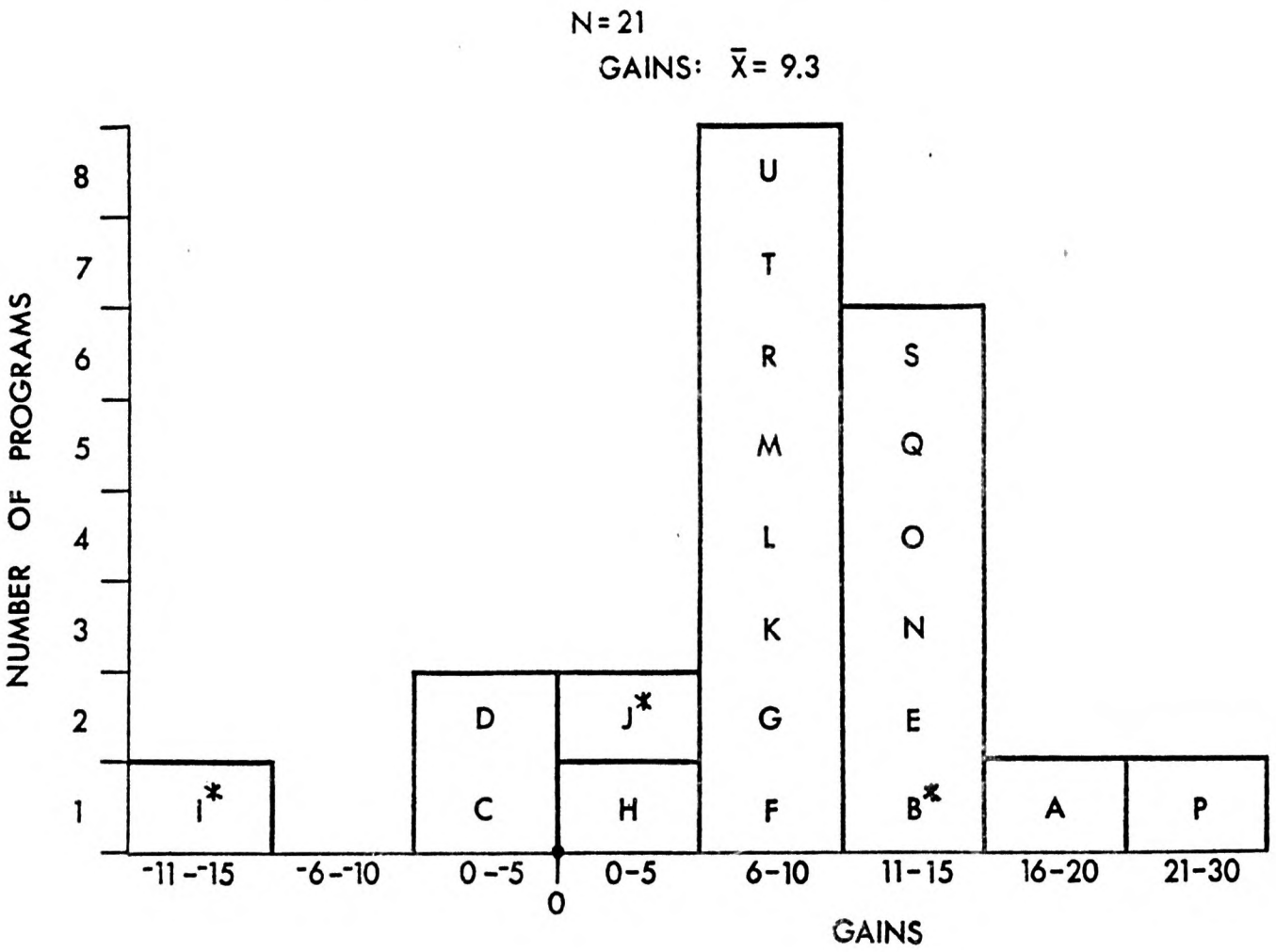
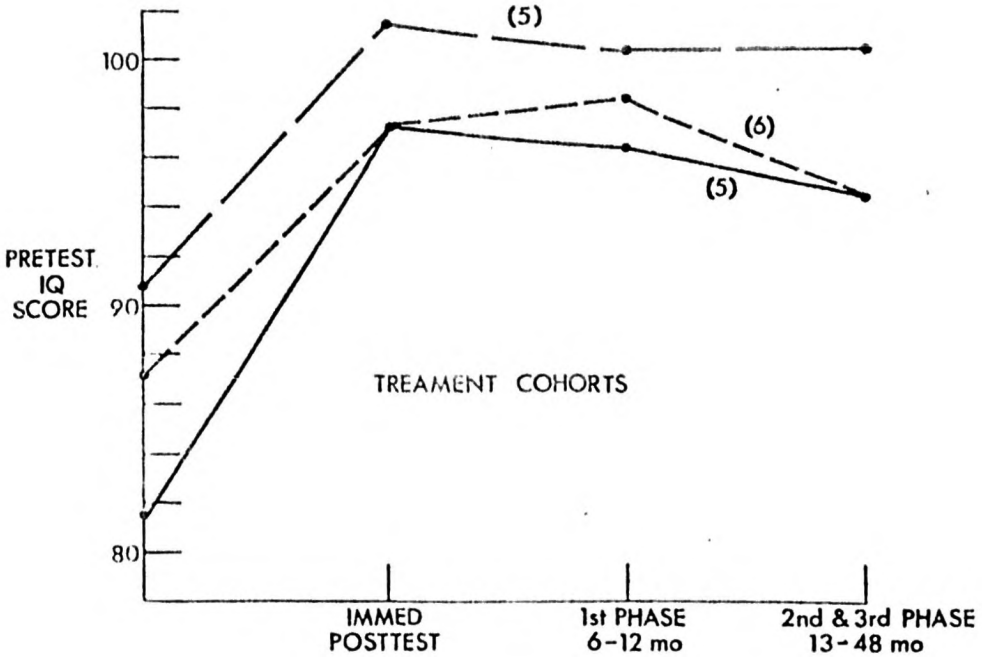


FIGURE 3. IQ GAINS BY PROGRAM COHORTS WITH SCORES (TEST TO FOLLOW-UP) GROUPED BY PRETEST IQ LEVEL



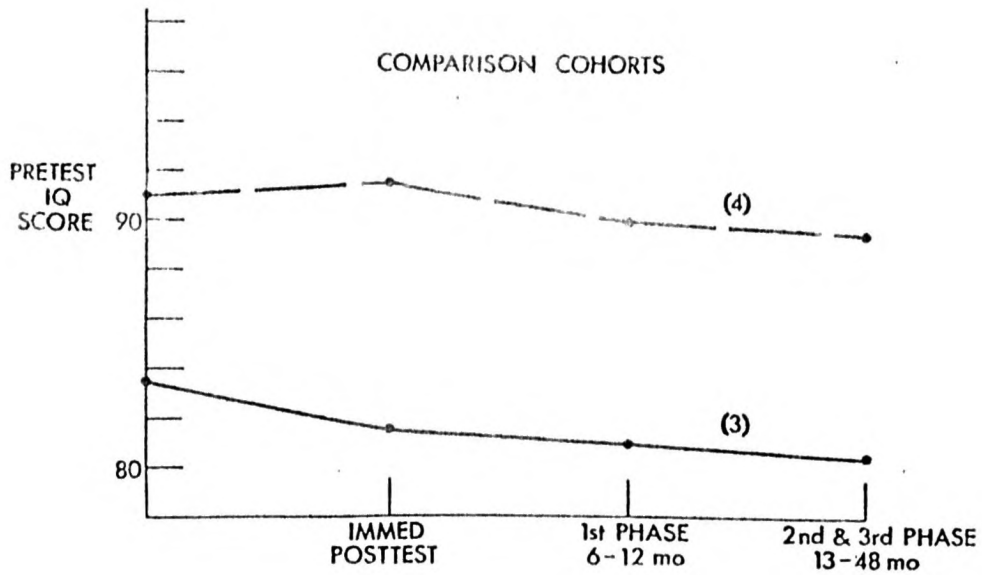


FIGURE 4. FOLLOW-UP CHANGES IN IQ LEVEL OF PROGRAM COHORTS, GROUPED BY LEVEL OF INITIAL GAIN