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ABSTRACT

This is a report on the second year of an experimental study of a cognitive curriculum developed for the I.Y.Y. (Involving the Very Young) Programs and a description of the evaluation of the day care staff training program of the Baltimore City Public Schools. The social factors which influence intellectual style, and the different systems of communication produced in different social classes are presented as causes of class differences in intellectual ability and as the focus of the IVY intervention program. The curriculum innovations and the evaluation from Year I were continued during Year II. A multivariate analysis of the Year I and Year II data indicated a significant Year X Treatment interaction. The differences between test performance of experimental and control group children found in Year I disappeared, due to the increase in the control group's performance. Test items for which normative data were available suggested that both groups were approaching national averages. Also included is an observational study of the effects of a program for training day care workers based in part upon the teaching strategy developed for the IVY program. Results indicated highly significant changes in the behavior of trained personnel. The report contains an extended theoretical analysis of the nature of cultural disadvantagement and suggests appropriate targets for educational intervention. Appendices contain lesson plans, curriculum objectives, and a day care observation checklist used in the program. (SB)

The second-year evaluation of the style-oriented cognitive curriculum in the I.V.Y. Program of the Baltimore City Public Schools and The evaluation of the Baltimore City day care center training program

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September, 1974

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Introduction

The report on this year's (Year II) research for the IVY program covers three areas: 1) the continued evaluation of the style-oriented curriculum that is currently being used in the IVY program; 2) the overall level of competence of children in the IVY program independent of the experimental study just completed; and 3) the evaluation of the day-care center training program directed by Mrs. Harriet Steinberg. This latter program is based, in part, upon the lesson plan strategy developed for the IVY program.

Both the choice of curriculum material and the teacher training method in the experimental portion of the IVY program were contained in the report prepared by this writer on the previous year's work (Webb, 1973). We believe, however, that we have since developed our ideas on the notions of intelligence more fully, and we see these theoretical advances as a significant part of our contribution to early education in general.

The report on the Year II research will be somewhat simpler than that prepared for Year I. A number of methodological problems (e.g., time-sampling techniques for teacher observations, training and monitoring of testers) were worked out during Year I and discussed at length in the previous report. Also, some empirical points (e.g., the difference between experimental teachers' behavior when using the lesson plans versus control teachers' behavior during their own lessons) seemed so clear that they were not worthy of replication. Overall, the results from Year II are amenable to a simpler presentation since our conclusions this year depend less on complex patterning in the results than they did in Year I.

As in the previous year's work, the content of the curriculum was based upon a particular view of the nature of intelligence. In the previous report, this writer suggested that the general concept of intelligence should be analyzed into at least three separable, but not statistically independent, components called power, structure, and style. Power was described as the general efficiency of mental operations most similar to Spearman's g. The literature suggested that this is an extremely stable human characteristic after the age of three or four and probably not a suitable candidate for experimental modification. The structural components of intelligence are the basic underlying operations of thought that do not vary among normal members of the species. These are, in effect, the species-specific aspects of human intelligence. No intervention short of the most extreme efforts at environmental modification would be expected to have any significant effect on these components of intelligence.

We believe that most programs of preschool intervention have erroneously attempted to modify power or structure and in so doing have been predestined to failure. We would propose, however, that a thoughtful analysis of the social aspects of human intelligence provides a new basis for intervention and one that is much more likely to produce long-term effects.

At first glance, there appear to be at least three distinct, although interrelated, processes by which social factors mediate intellectual growth. First, a secure attachment with a mother or mother figure appears to facilitate exploration and play in infancy (Ainsworth & Bell, 1969; Harlow & Harlow, 1969; Main, 1973; Rheingold & Eckerman, 1969), and these activities

seem to be essential aspects of intellectual growth. Main (1973), in fact, has demonstrated not only that a secure attachment relationship can mediate intellectual performance by modifying play, exploration, and social interaction, but also that securely attached children outperformed insecurely attached children by about 15 points on the Bayley Mental Scale. Main argued that the gain in DQ points was due, in part, to the social skill shown by the secure children in dealing with the examiner.

A second role that social factors play in intallectual growth is the providing of models for incorporation into the child's behavioral repertoire. Due perhaps to the pervasive influence of Piagetian constructivist epistemology, the role of models in the development of intelligence has been a relatively neglected topic in recent years--with the notable exception of the work of Jerome Bruner (1971). Most of the work on modelling (e.g., Bandura, 1969) has been concerned with socialization per se (e.g., why some models are accepted more readily than others; Flanders, 1968) rather than with the incorporation of intellectual skills. It is possible to assert, however, that modelling processes are essential to the child's intellectual growth. In infancy, social models may demonstrate patterns of reciprocal play which may, in turn, constitute prototypes for later instructional interactions. In later childhood, children are expected to incorporate many specific models of both behavioral skills (e.g., how to ride a bicycle) and intellectual skills (e.g., mathematical operations of algebra). Neither of these abilities follows automatically from the self-regulated intellectual development of the child, but depends on the incorporation of cultural tools. While there are certainly constraints--

both motoric and intellectual--that limit the process of acculturation, competence is as much a function of the tools available in one's culture and the use one puts them to as of any intrinsic factors.

The third role that social factors play in intellectual growth, and the primary topic for discussion here, is the socialization of a child to the intallectual world view of his social group; this topic appears to have considerable relevance for ethnic and social-class differences in intellectual performance, and for the problem of educational intervention. If it may be assumed that a child's "intellectual" approach to life is shaped by the availability of cultural models and the quality (e.g., security or insecurity) of his relationship with significant persons, the question still remains: to what is the child being socialized? How does his social experience affect his approach to intellectual activity? The thesis on which our work with the IVY program has been based is that there are important and pervasive differences in the intellectual functioning of children that may not be tapped by conventional IQ and achievement measures and that are closely related to particular kinds of social experience.

Hess's (1970) review demonstrates that there is a major controversy over the means by which ethnic and social class factors affect the development of children. Often the effects themselves are well-known--as in the connection between social class and school performance, or between race and IQ in this country--but there is essentially no understanding of what processes mediate the relationship. Social class may--to follow the line of Jensen (1969) or Herrnstein (1973)--represent society's sorting itself out on the basis of innate intelligence. Still, work by Hess and others

(Bernstein, 1970; Hess & Shipman, 1965; Bee, et al., 1969; Greenfield & Bruner, 1969) suggests that the way in which children are socialized may have an important influence on the way they think, affecting their intelligence in the broad sense.

But what do we mean by "intelligence in the broad sense"? We would like to propose that to examine the effects of social experience on children's intellectual performance in a sufficiently complex fashion, we must attempt to escape the rubrics within which intelligence is conventionally viewed. It has been argued elsewhere (see Webb, Oliveri, & Harnick, 1974) that the two major approaches to intelligence--Piagetian and psychometric--may each be inadequate both for assessing the effects of socializing practices on intelligence, and for providing a framework for the institution and evaluation of compensatory educational intervention. The "structures" of human intelligence, in the Piagetian sense, are universal or, perhaps, species-specific behaviors that are seen to develop in similar fashion in all children; as such, they should not be particularly appropriate for, or susceptible to, modification by any less than extreme environmental variation. A psychometric approach to educational intervention creates related problems in that intelligence as assessed through IQ tests appears to be one of the more stable of human characteristics after about the age of four (Bloom, 1964), and to be determined to a great degree by hereditary factors (Vandenberg, 1971). Even though it is quite possible to modify IQ scores in the short run through a variety of programs (e.g., see reviews by Bereiter, 1972; Bronfenbrenner, 1974; Karnes, 1973) the long range benefits of such intervention are still in doubt. It has been found--apparently

without exception--that within one to two years after children leave intervention Programs their tested IQ's decline to the levels of untreated controls (see reviews above). Most investigators imply that this so called "fade-out effect" is due to the child's return to his debilitating environment (Bereiter, 1972; Weikart, 1972) and there is at least one explicit model of the phenomenon (Campbell & Frey, 1970). We would argue, on the other hand, that the fade-out effect is inherent in the nature of the IQ test which by definition is a measure of the performance of a child relative to the average child of the same age. As children get older, the test content changes, and the skills that have been taught in the intervention program are no longer relevant to test performance. Psychometric IQ thus appears to be an unsuitable choice as the standard of success in educational intervention.

The approach that appears more appropriate and of more potential long-range benefit is concentration upon what has been termed style (Webb, et al., 1974). Two or more individuals with identical intellectual structures and similar IQ's may still respond in different ways when faced with a problem demanding intellectual activity. In that their mode of responding is a relatively consistent aspect of their intellectual performance, it may be considered their style. Important aspects of style appear, in turn, to be determined to a great extent by social events.

The postulation of a dimension of intellectual style that is determined in large part by social experience receives support in the literature from Bernstein's (1970) notion of restricted and elaborated communication codes, Sigel's (Sigel, Secrist, & Forman, 1973) notion of "distancing,"

and the increasing body of work on the verbal mediation of memory (e.g., see Flavell, 1970). Bernstein (1970), for example, argues that particular forms of social-class experience shape particular modes of communication. The economic circumstances of the lower class are said to create a culture where "we" is emphasized over "I," and where many identifications, experiences, and assumptions are closely shared. In this type of social situation, there appears little need for detailed verbal explication of meanings, motives, or feelings; consequently, a "restricted code" arises which is composed of context-dependent utterances with implicit and particularistic (tied to the immediate situation) meanings. The social situation of the middle class, however, is said to emphasize "I" over "we"; the intent of other speakers cannot often be taken for granted, and speakers are encouraged to elaborate meanings and make them more explicit and specific. Thus, middle-class speakers are seen to develop the tendency toward an "elaborated code," which embodies more context-independent utterances whose meanings are explicit and universalistic (transcending the immediate situation). The elaborated-restricted code distinction also implies a second important feature of intellectual style. The degree to which a child believes the world is amenable to rational understanding and that his own efforts are effective in modifying it will vary as a function of culture (Greenfield & Bruner, 1969) and of social group (Bernstein, 1970).

Although Bernstein emphasizes that a restricted code should not be devalued as a mode of communication within a particular social context, it does not appear adaptive in a school context where communication of

explicit, abstract, and universalistic meanings is expected. "Thus between the school and the community of the working-class child there may exist a cultural discontinuity based upon two radically different systems of communication" (Bernstein, 1970, p. 29). This is, then, one dimension of what we're calling "style"--the tendency (or lack thereof) to communicate inter-individually in an explicit, abstract, and meaningful manner, with understanding and anticipation of the perspective of one's partne (see Garvey & Hogan, 1973, for a sample of young children's competence in these matters).

The notion of style can also embody, however, the adaptive use of intra-individual communication, that is, the characteristic use of one's representational abilities of memory and language to "help oneself" intellectually (see Carroll, 1964). This is what is implied in Sigel's "distancing hypothesis"--the notion that not all children automatically use their representational abilities to their best advantage when confronted with tasks demanding intellectual activity. Sigel advocates teaching children to do so by stressing the abstract and the non-present as opposed to only the concrete and the present; the point is to encourage children to use their representational skills to create some distance between themselves and the immediate situation--to make themselves "step back," as it were, and give themselves a chance to think and talk about what they're doing and perceiving.

Style should be considered an intellectual Weltanschauung, a characteristic way of approaching intellectual tasks in general that may be reflected in a number of specific behavioral strategies. Keeney, Cannizzo, and

Flavell (1967), for example, showed that first-graders who spontaneously used verbal mediation in a memory task performed better than those who did not, but that the performance of non-mediators improved upon the simple instruction to verbalize. Use of verbal mediation thus appears to be a highly effective intra-individual strategy. The failure to mediate, however, may be part of a more general failure to use language and other representational skills in an adaptive manner (Bruner, 1971), and thus might well be related to social-class experience.

To the extent that one's intellectual style--both inter- and intra-individual--is determined by social experience, it should be fairly open to remedial influences--at least with very young children. To the extent that it is effectively modified, the benefits to later school-related activity may be substantial, if the modification is strong enough to withstand the vicissitudes of everyday life. For, as Bernstein (1970) and Hess (1970) imply, what might be considered a maladaptive style in dealing with intellectual tasks arises as an <u>adaptive</u> response to a pervasive and persistent social context. Unless that social context changes, certain stylistic predispositions arising from and reinforced by that context may be highly resistant to long-term modification, a possibility of which optimistic and well-intentioned investigators should be aware.

These discussions of style suggest that a major feature of intelligence arises largely through communicative experiences. If this is true--and this writer believes the evidence is compelling--it suggests that the critical aspects of an intervention program are the communication patterns of teachers and children. That is, what must be modified is the way teachers

talk with the children, and this modification needs to be in the direction of more elaborated and abstract communication. In order to make these changes in teacher behavior, the curriculum materials for the IVY program were prepared in the form of lesson plans that specified the kinds of communication desired in considerable detail. The specification, however, was in examples rather than in terms of abstract principles. This is an inductive as opposed to a deductive approach to teacher training. A review of the literature supporting this decision is contained in the report on Year I. It must be noted, however, that the evaluation of the IVY curriculum is an evaluation both of curriculum content and of a particular strategy of teacher training.

The first year's curriculum study in the IVY program provided strong data for the feasibility of both the curriculum material and the strategy of teacher training. In the first year's work with the style-oriented curriculum we discovered that: 1) the lesson plan strategy was effective in increasing the complexity of teachers' verbal interaction with the children during lesson plan periods; and 2) that the curriculum improved the performance of experimental children on a number of measures. The measures positively affected were Picture vocabulary among younger children and Pantomime, Memory, and Comprehension among older children. In addition, Social Competency was rated higher in the experimental group than in the control group (see the report on Year I for a description of these measures).

These data supported the predicted effectiveness of the program. The measures that were improved were those related to the concept of distancing--using representational abilities to escape the confines of

the immediate situation. These abilities were viewed as critical to the children's future development and education as they should have strong effects on communication and comprehension skills.

In the second year of the curriculum evaluation, the basic program was continued in nearly unaltered form, and the present report assumes some familiarity with the content of the earlier report. The one substantive change in the program was a set of three new lesson plans introduced in the spring of 1974. These lesson plans that are attached as Appendix I were designed to deal with certain specific behavioral objectives added by the project manager of the IVY program.

In addition to these substantive changes in the curriculum, certain administrative changes in the program and events occurring during the course of the year may have produced important effects in the program. The results to be reported below comparing Year I (October, 1972, through May, 1973) with Year II (October, 1973, through June, 1974) of the program argue to the importance of what were, strictly speaking, non-programmatic variables. These will be discussed more thoroughly in the Conclusions section.

1. Evaluation of Year II of the Experimental Program.

As in the evaluation of Year I, we plan to present data on: 1) differences in teacher behavior between experimental and control groups; and 2) evaluation of student performance. We turn first to teacher behavior.

Teacher Evaluation

In the previous year's work, two variables accounted for the significant differences between experimental and control teachers. The major

component of difference was attributed to a variable that was called "Complex processes," that consisted of verbal elaborations, descriptions of transformations, reference to non-present objects, use of comparisons and imitation, etc. Complex process behavior was seen as the major class of teacher behavior specifically called for by the curriculum and was shown to be utilized more frequently by the experimental teachers than by the controls. A second class of behaviors called "Non-information" consisted of verbal instructions that did not convey any specific information and was found to occur more frequently in the verbalizations of the control teachers than of the experimentals.

In Year I the major comparison dealt with experimental teachers' lesson plan activities and control teachers' own directed activities. Since these differences proved to be highly significant, but did not prove the generality of the experimental curriculum to material beyond the specific lesson plans, the analysis for Year II focused entirely on non-lesson plan directed activities in both groups.

Six observers were trained by means of videotape recordings to use the teacher observation checklist described in the report on Year I. Training was continued until 16 minutes of nearly perfect coding was achieved. Although an exact reliability coefficient could not be calculated because of training methods, each observer coded both control and experimental teachers, thus balancing individual differences in coding between the experimental and control groups.

Each observer made two sets of observations, each four minutes in length, with codings being made on alternate ten-second intervals as in Year I. All teachers were informed that the observations would be made on

a particular day, and experimental teachers were asked not to do a lesson plan from the curriculum on that day. Coding began when the observer determined that the teacher was engaged in a directed activity, i.e., a group activity involving teaching. Proportions of intervals in which behaviors in the various categories appeared are presented in Table 1.

Multivariate analysis of variance (MANOVA) on teacher observations revealed that none of the variables on the observation checklist differentiated between the experimental and control teachers and that there was no consistent pattern of differences that contributed to an overall significant MANOVA. Given that the reliability of the observations was acceptable, the only parsimonious interpretation is that there was no significant difference between the experimental and control petterns of teacher-child interaction when teachers were engaged in directed activities. The one qualification that seems necessary is that our instructions to the experimental teachers to do no lesson plans on the day of observations might have been interpreted to mean that no activity like that used in the lesson plans should be undertaken. This may have artificially reduced the levels of Complex processes used by the experimental teachers below that ordinarily present.

Following presentation of student evaluations from Year II, we will return to the teacher data in a comparison of Year I and Year II.

Student Evaluation

Children in the IVY program were tested twice during the year--in January and June--by teams of testers under the direction of the writer. As in previous testing, the teachers were not told what the test material

Table 1

Mean Number of Codings for Teacher Behavior Checklist Categories

	Experimental		Control	
	Mean	SD	Mean	SD
Questions	15.375	5.780	15.750	3.732
Short Answers	15.125	5.515	16.500	6.141
Descriptions	13.375	5.290	15.000	5.606
Complex Processes	24.625	11.057	24.000	12.444
Non-Information	14.625	6.781	13.750	4.446
Classroom Directions	2.875	3.720	2.375	4.406
Blank Intervals	11.500	5.264	11.000	4.036

would be and testers did not know whether the children tested were in experimental or control groups. Training procedures and management techniques were similar to those described in the report on Year I.

January Testing. A battery similar to that used in Year I was employed, specifically including the measures that reflected distancing and that had differentiated the experimental from the control group in Year I. These included Picture Vocabulary, Comprehension, Memory, and Pantomime items. In addition, two classes of items were added. One set consisted of more complex Comprehension items that required descriptions of activities conveyed by pictures and were designed to measure both comprehension and communication skills in response to visual stimuli. The second set of items consisted of specific behaviors including labeling, counting, and naming shapes and colors that were presumably being stressed in the control schools. We anticipated that the control children might be superior to the experimental children on these particular behaviors since they were not stressed in the experimental program. Data from the measures taken are presented in Table 2.

The data from the January testing are difficult to present because the differences found emerged only in the overall patterns of test scores. Also, a two-and-one-half-months average difference in age in favor of the control groups made any interpretation of obtained test differences suspect. When age was covaried, two items--naming shapes and colors and counting squares--showed significant differences in favor of the control group. These measures, of course, had been designed to measure skills on which the control group was assumed to exceed the experimental. Other than

Table 2

Mean Performance of Experimental and Control Children at January, 1974, Testing

Measures	Possible Scores	Experimental Mean	Experimental SD	Control Mean	Control SD
Classification	0-1	2.270	1.066	2.439	1.035
Labeling shapes and colors	0-4	1.413	1.186	2.035*	1.164
Counting to three	0-1	.524	.503	.614	.491
Counting squares within an array of circles and squares	0-1	.254	.439	.439*	.501
Picture vocabulary	0-18	12.825	2.012	12.947	1.875
Comprehension I, #1	0-1	.238	.429	.281	.453
Comprehension I, #2	0-1	.571	.499	.456	.503
Labeling features of a picture	0-3	2.540	.839	2.684	.572
Description of action in a picture	0-3	1.857	1.060	2.263	.936
Integrated description of a picture	0-3	.270	.627	.474	.804
Memory matching	0-9	6.794	2.103	7.035	2.104
Pantomime	0-11	8.714	4.647	9.947	3.856

*$p < .05$

these, no single measures reached statistical significance, though the overall MANOVA approached significance. The interesting aspect of the discriminant function analysis, however, was that most measures of distancing (Comprehension questions, labeling and use of action words in describing a picture, Memory Matching, and Pantomime) tended to favor the experimental group and the majority of the other measures favored the controls. A number of alternative analyses were undertaken to correct for the effects of age differences, but all combinations of the data generated the same overall conclusion.

Thus, at the January testing there were suggestions of a pattern in the data that consisted of higher scores on distancing measures in the experimental group and higher scores on the other measures in the control group. When the January data were analyzed there seemed to be two possible interpretations of the data. Either there was a weak hold-over effect from the previous year, or the groups were beginning to differentiate on the basis of Year II experience. In either case the differences were not large and were of questionable statistical significance.

June Testing. The test battery in the June evaluation was composed of four test items utilized in the Year I evaluation, some new items considered germane to the notion of distancing, and a sample of items constructed from a set of curriculum objectives devised by the IVY project manager. The following is a condensed description of the tests used and the methods of scoring.

1. Memory Matching Test. Five examples of this delayed matching-to-sample task were administered following a demonstration. The procedure was as follows. The child was first shown a card with one, two, or

three target drawings of common objects; the card was then withdrawn and was replaced after three seconds with a choice array composed of several drawings including the targets the child had seen before. The child was aksed to "show me the one(s) you saw before." Each child was scored "1" (correct) or "0" (incorrect) for each target drawing in each of the five sub-tests.

2. Stanford-Binet Picture Vocabulary (Form L-M, year II). The child was presented with a series of 18 pictures of common objects and was required to name them. Each child was scored on the number of pictures he named correctly ("correctness" was judged according to Stanford-Binet criteria).

3. Stanford-Binet Comprehension I (Form L-M, year III-6). Each child was asked two questions: "What must you do when you are thirsty?" and "Why do we have stoves?" On each question, a score of "1" was given if the child satisfied the Stanford-Binet criterion for correctness, and "0" if he did not.

4. Talking about a Picture. This task involved showing the child an 8-1/2" X 11" drawing of a playground scene and asking him to "tell me what is happening in this picture." Each child was scored "1" or "0" on each of two criteria: 1) description of action in the picture, and 2) connectedness and integration of the description (as opposed to fragmented descriptions of isolated actions).

5. Pantomime with Four Cue Conditions. The child was required to pantomime any action appropriate to a ball, but was given four chances to do so, in successive cue conditions of decreasing degrees of difficulty.

In the first condition, the child was asked to "show me what you can do with a ball," with only this verbal instruction as a cue. In the second condition, a picture of a ball was present as a cue, and in the third condition, a ball was in view but out of the child's reach. If a child pantomimed an action appropriate to the ball in one condition, he was not required to go through the following conditions, since it was assumed that performance in the earlier, more abstract, cue conditions would assure performance in the later, more concrete conditions. Each child was assigned a score of "4" if he pantomimed in the first condition, "3" if he pantomimed in the second, "2" if he pantomimed in the third, "1" if he pantomimed in the fourth, and "0" if he did not pantomime at all.

6. Classification. In this task, eight blocks of two sizes, two colors, and two shapes were presented to the child and he was asked to "put together the ones that are alike." Next, the child was asked to reclassify the blocks: "Now put them together another way so that the ones that are alike are together." Each child was scored "1" or "0" on his classification (separating the blocks into groups on any consistent basis: in terms of size, color, or shape), and on his reclassification (finding another consistent way of separating the blocks).

7. Descriptive Relational Terms. Each child was presented with pairs of large and small rectangular blocks and large and small rings and was asked to choose the "big" one, the "tall" one, the "fat" one, and the "heavy" one. For each of the four terms, each child was scored "1" for a correct choice, and "0" for an incorrect choice.

8. Memory for Instructions. The child was shown red, green, and white rings and, before he was allowed to touch them, was instructed to

"take the green ring and put it right here (indicating a place on the table); take the red ring and put it on top of the green ring; then put the white ring on top of both of them." These instructions were repeated and the child was reminded to remember them; then the rings were placed within his reach and he was asked to follow the instructions. Each child was given a score of "1" if he followed the instructions. Each child was given a score of "0" if he did not.

Next, the child was asked: "Which ring did you put down first?" "Which ring did you put down second?" "Which ring did you put down third?" Each child was scored "1" or "0" on his designation of the first, second, and third rings.

9. Spatial Relational Terms. Using two rectangular blocks, a ring, and a toy car (where appropriate), the child was asked to put the car "on top of," "next to," "around," "away from," and "close to" one block, "between" two blocks, and "inside" the ring. The child was also asked to show the "top" and the "bottom" of the chair he was sitting on. Each child was scored "1" or "0" on his performance relative to each of the nine spatial terms.

Twenty-nine discrete measures were taken; the mean performance of the experimental and control children on these measures are presented in Table 3. Of these measures, only two revealed statistically significant group differences when age was covaried. Experimental children performed better than control children on Pantomime ($F(1,125 = 5.118, p < .025)$, and control children performed better than experimental children on one of the five Memory Matching sub-tests ($F(1,125 = 8.293, p < .005)$. Since a multivariate analysis of variance on all of the measures did not reveal a

Table 3

Mean Performance of Experimental and Control Children at June, 1974, Testing

Measures	Possible Scores	Experimental	Control
Memory matching #1	0-1	.828	.844
Memory matching #2	0-2	1.406	1.391
Memory matching #3	0-2	.656	.766
Memory matching #4	0-3	1.641	2.000
Memory matching #5	0-3	1.047	1.531*
Picture vocabulary	0-18	13.766	13.859
Comprehension I, #1	0-1	.406	.391
Comprehension I, #2	0-1	.469	.516
Description of action in a picture	0-1	.891	.891
Integrated description of a picture	0-1	.141	.141
Pantomime	0-4	3.781*	3.484
Classification	0-1	.766	.750
Reclassification	0-1	.109	.203
"big"	0-1	.969	.984
"tall"	0-1	.750	.750
"fat"	0-1	.781	.875
"heavy"	0-1	.922	.906
Memory for instructions	0-1	.438	.625
"first"	0-1	.641	.781
"third"[1]	0-1	.563	.656
"on top of"	0-1	.969	1.000
"next to"	0-1	.781	.813
"around"	0-1	.859	.891
"away from"	0-1	.844	.797
"close to"	0-1	.938	.938
"between"	0-1	.828	.922
"inside"	0-1	.938	.906
"top" of chair	0-1	.797	.813
"bottom" of chair	0-1	.750	.766

* $p < .05$

[1] "Second" was deleted from analysis since the nature of the task permitted a disproportionally high number of children to be correct merely by chance.

significant difference between the groups, and because there are so few significant univariate differences relative to the number of measures taken, we must conclude that the measures that do reach significance are most likely due to random variation and that there are, in fact, no meaningful differences between the experimental and control children at this time.

One could interpret this lack of significance in various ways. Perhaps the most obvious explanation would be that our experimental input weakened in the second year, i.e., that the experimental teachers simply were not using our lesson plans as much or as well as they did in the first year. This might be a reasonable explanation since, in fact, no experimental-control differences in teacher behavior were found this year (see above), and because there appeared to be disruptive events (most notably, the teachers' strike in early 1974) that understandably weakened our influence in the experimental schools. There is evidence, however, that suggests an alternative explanation, namely that there was contamination of our experimental and control conditions. This is shown in a comparison of the Year I and Year II teacher observation and test data.

Year I - Year II Comparison

An examination of the mean Complex processes scores of Year I and Year II experimental and control teachers revealed that in Year I the scores in the experimental group were almost twice as large as in the control group (21.50 versus 12.00). In Year II, however, both experimental and control groups showed more Complex processes activity (experimental = 24.63; control = 24.00) than the experimental group had done in

previous year and there were no significant differences between the groups in Year II (see above). An analysis of variance on these data indicated a Year by Group interaction effect ($F(1,28) = 6.38$, $p < .025$) that supports the significance of the change data. Figure 1 presents a graphic representation of these findings; the Year, Group, and Year by Group interaction effects on Complex processes can be seen in Table 4.

This evidence suggests that, by whatever means, the control teachers had "caught on" to what the experimental teachers had been doing and that our experimental and control conditions were thus effectively dissolved. There are a number of possible reasons why this might have happened. Both the experimental and control teachers were part of the same program and it is likely that they shared insights at times; the control teachers had watched our testing twice before the second full-year evaluation and thus might easily have gotten some idea of our orientation; one experimental teacher from the first year became a program assistant in the second year; and all three program assistants (who supervised both experimental and control schools) attended our experimental teachers' meetings.

If it is, indeed, the case that our influence spread to the control group in the second year, this could provide a reasonable explanation for the lack of experimental-control group differences found in the children's test performance. Also, because both experimental and control teachers were found to be using more Complex processes behavior in Year II than in Year I, it would be reasonable to expect that both experimental and control children this year might be performing better than similarly-aged experimental and control children last year. Evidence exists that suggests

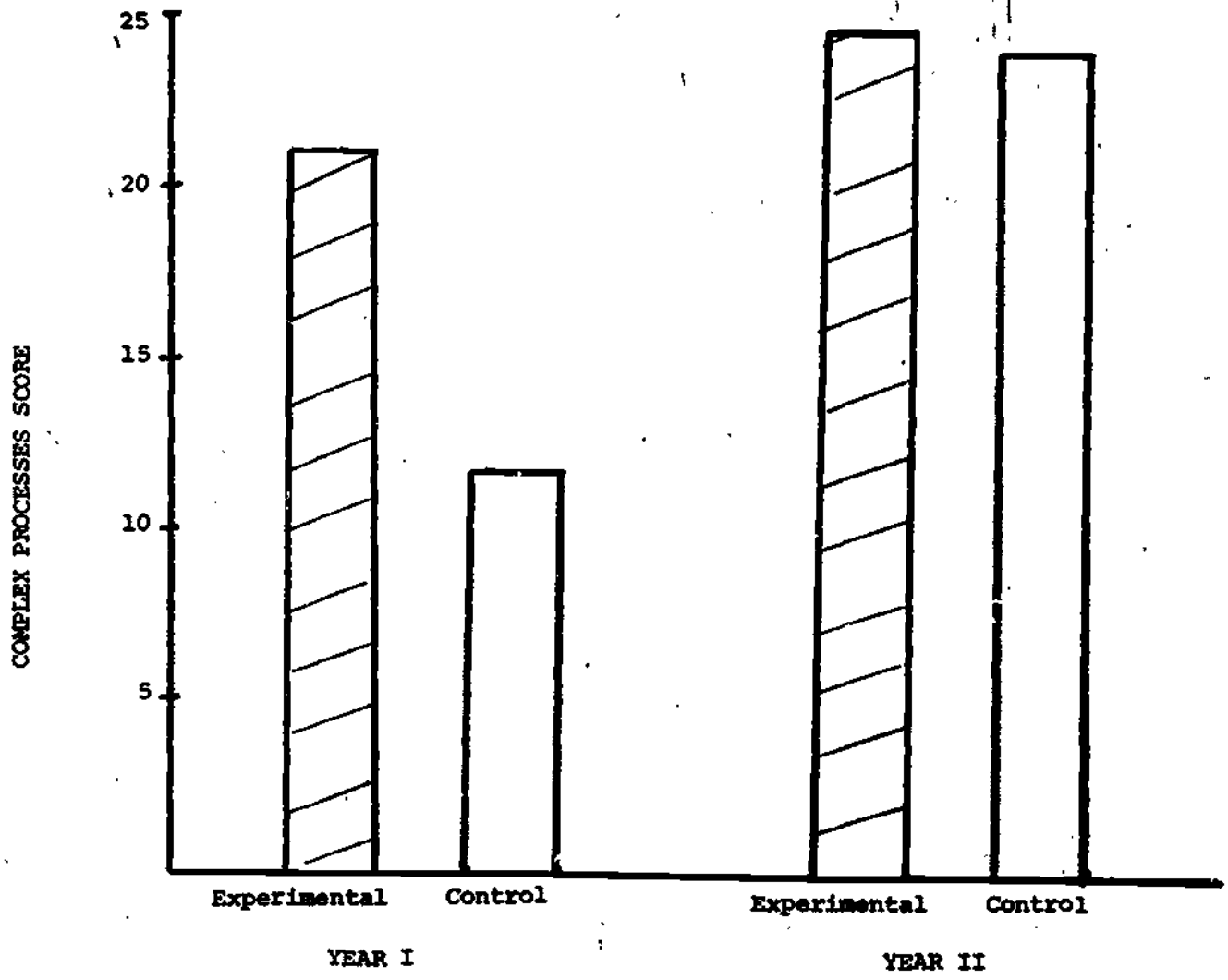

Figure 1. Mean complex processes scores for experimental and control teachers, Years I and II.

Table 4

Two-Factor Analysis of Variance for Complex Processes Scores of Experimental and Control Teachers, Year I and Year II

Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F
Total	3744	31		
Group	200	1	200	2.01
Year	338	1	338	3.39
Group X Year	421	1	421	4.23*
Error	2785	28	99.46	

*p <.05

that this is in fact the case. A two-factor (Year by Group) MANOVA performed using four test items contained in both the Year I and June, Year II test batteries (Picture Vocabulary, both Comprehension questions, and Pantomime) showed clear differences between the Year I and Year II samples of experimental and control children (multivariate $F(4,233) = 8.567$, $p < .001$). Table 5 presents the outcome of this analysis for the Year effect (age covaried). The individual items that were seen to be contributing to the multivariate outcome were Picture Vocabulary, the second Comprehension question, and Pantomime. The Year II sample of children outperformed the Year I sample on Picture Vocabulary ($F(1,236) = 13.790$, $p < .001$) and Pantomime ($F(1,236) = 13.533$, $p < .001$); a statistically weaker finding was that the Year I sample exceeded the Year II sample on the second Comprehension question ($F(1,236) = 4.086$, $p < .044$). This analysis also provided evidence that our experimental treatment still had some effect when both years' evaluations were considered. Although the multivariate test of the Group effect only approached statistical significance ($F(4,233) = 2.132$, $p < .078$), the univariate test of Picture Vocabulary revealed a significant difference in favor of the experimental group ($F(1,236) = 5.964$, $p < .015$), and a weaker difference in favor of the experimental group in Pantomime ($F(1,236) = 3.655$, $p < .057$).

It appears, then, that the style-oriented curriculum we instituted in the Fall of 1972 can still claim a moderate degree of success. Although the experimental-control split appeared to collapse in Year II, the evidence indicates that this was not because our influence weakened or was ineffective in the experimental schools, but because our influence

Table 5

Tests of Significance between Performance of all (E and C) Children in Year I and all (E and C) Children in Year II

Multivariate Analysis of Variance

Using Wilks Lambda Criterion

F	DFHYP	DFERR
8.567**	4.000	233.000

Univariate Analysis of Variance

Variable	F(1,236)	Standardized Discriminant Function Coefficient
Picture vocabulary	13.790**	.588
Comprehension I, #1	.041	.045
Comprehension I, #2	4.086*	-.621
Pantomime	13.533**	.669

*p < .05; **p < .001

somehow spread to the control schools. Indeed, all of the children (both experimental and control) appeared more competent in Year II than similar children did in Year I.

2. Evaluation of Overall Level of Competence of the IVY Children.

In the spring of 1974, we were asked to include in our teacher training and final evaluation a set of curriculum objectives constructed by the IVY project manager (these objectives are presented in Appendix II). Several of these objectives were concepts that were already contained in the experimental lesson plans and were tapped through our existing Year I and January, Year II test batteries. Some additional objectives were incorporated into the three new lesson plans that we introduced to the teachers in the early spring of 1974 (see Appendix I), and these and several other specific objectives were included in the June, Year II test battery.

The specific items from the set of curriculum objectives that were included in the final test battery have been described above under the headings of "Descriptive relational terms," "Memory for instructions," and "Spatial relational terms." These items were sampled from the entire set of objectives to generate a representative subset with three restrictions: 1) the sample of items had to cover a range of abilities; 2) the sample had to be amenable to testing in a minimum of discrete test situations; and 3) the items sampled had to include behaviors that children of preschool age are capable of learning. With respect to point three, for example, the relational concepts included in the curriculum objectives were often referred to by a pair of adjectives (e.g., tall-short, fat-thin) that follow a linguistic rule called lexical marking. One member

of the pair is more fundamental and is called the unmarked member. Young children usually acquire the use of the unmarked member before the marked. We would expect the children we tested to be nearly 100 percent wrong if we had used "short" and "thin" rather than "tall" and "fat." With children a year or so older we would have used the marked adjective, but not with children of the age tested.

Table 6 presents the percentages of all children (both experimental and control) passing the items sampled from the set of curriculum objectives. It is apparent that most of the children were quite proficient in dealing with these concepts since between 75 and 98 percent of the children passed the majority of the items, the lowest percentage being 61 percent.

Data from several other items in the test battery, however, were amenable to translation into percentages, and Table 7 presents the percentages of all children passing these items. It can be seen that the children were relatively less proficient on the items reflective of distancing abilities than they were in the concepts described in Table 6. Although approximately 75 percent of the children could successfully classify blocks on the basis of form, color, or size, only 15 percent were capable of reclassification, i.e., having enough perspective to conceive of another way to perform the task. Similarly, although 89 percent of the children used action words in describing a picture, only 14 percent gave a cohesive, integrated communicative response; the majority of the remaining children gave rather fragmented descriptions of somewhat isolated actions. Another measure reflective of distancing, Memory for instructions, enjoyed only a 53 percent pass rate, and the

Table 6

Percentages of all IVY children tested (N = 128) passing concepts sampled from curriculum objectives

	Percentage of children passing items
Descriptive Relational Terms	
big	97.9
tall	75.0
fat	82.8
heavy	91.4
Appreciation of Sequence*	
first	71.1
third	61.0
Spatial Relational Terms	
on top of	98.5
next to	79.7
around	87.5
away from	82.1
close to	93.8
between	87.5
inside	92.2
top	80.5
bottom	75.8

*Taken from the second part of the Memory for Instructions task described above. "Second" was deleted from analysis because the nature of the task permitted a disproportionally high number of children to be correct merely by chance.

Table 7

Percentages of all IVY children tested (N = 128) passing test battery items not included in curriculum objectives

	Percentage of children passing items
Classification	75.8
Reclassification	15.6
Memory for Instructions	53.2
Use of Action Words in Communicated Description of a Picture	89.1
Integrated Statement in Communicated Description of a Picture	14.1
Comprehension I, #1	39.9
Comprehension I, #2	49.3

first and second Comprehension questions were passed by only 40 percent and 49 percent of the children, respectively.

What this evidence reveals is that, while the IVY children performed quite well with respect to several discrete concepts (i.e., those sampled from the curriculum objectives), they performed relatively more poorly on tasks requiring complex and elaborated thought and communication (abilities representative of distancing). According to the theoretical analysis presented above and in this writer's report on Year I, it is these latter skills that might be most crucial for future school success; it is this writer's opinion, then, that what is needed in preschool education is less concentration on informational content and more concentration on comprehension and communication skills. The preschool educator's most important function, it would appear, is not just to provide "information" to young children, but to lead them to the most effective use of their representational abilities in order that they might come to think and communicate about their learning experiences in a meaningful and elaborated fashion. It is this approach that we encouraged in the experimental portion of the IVY curriculum for the past two years, and it is hoped, indeed strongly suggested, that it not be abandoned.

3. Evaluation of Day Care Training Program.

This portion of our evaluation involves an assessment of the training program instituted by the Baltimore City School System for day care center staff, many of whom had no previous training in early childhood education. Twenty-eight centers were selected at random from the city's full list of operating day care centers. The staff of these centers participated in a program designed to foster a more complete understanding of the preschool child.

The content of the program was divided into five main areas: Developing daily schedules, Instituting a more cognitively oriented curriculum, Developing perceptual-motor skills, Encouraging awareness of developmental level, and Using proper methods of disciplins.

Developing daily schedules

Much of the training program was concerned with instructing the day care staff members in the necessity of maintaining an orderly, planned schedule. Examples of possible planning models were presented for discussion and evaluated in terms of their merits for satisfying the needs of the preschool child.

Instituting a more cognitively-oriented curriculum

Instruction was provided in the various techniques of introducing concepts into a preschooler's experience. Various times of the morning were selected and activities were constructed which incorporated many of the concepts developing in the mind of the preschooler. Often the lessons developed for the IVY program by this writer were included as examples of cognitive skills into every media used in preschool activities--arts and crafts, music, science, etc.

Developing perceptual-motor skills

Emphasis was placed by the training program on the developing physical and sensory abilities of the young child. Day care staff members were instructed in the necessity of including activities and equipment which would stimulate sensori-motor abilities such as audition, tactual discrimination, and physical coordination.

Encouraging awareness of developmental level

Day care personnel were instructed in basic child growth and development and were shown the importance of applying this knowledge to grouping children for play and developing age-relevant activities. Discussions were held on the utility of age and ability grouping, and the relative merits of each were considered.

Using proper methods of discipline

Instruction was provided in the various ways of maintaining order and a pleasant environment. Day care staff members were provided with materials and lectures on the effects of alternative discipline measures on the child and the school situation.

Because of the January, 1974, teachers' strike, only 16 instruction sessions were held. Teachers and project assistants from the IVY program met with day care staff for an hour and a half at each of these sessions.

Eight of the day care centers were randomly selected for evaluation. In addition, a group of day care centers which had not been included in the training program were contacted and evaluated, serving as a control for the experimental centers.

It was assumed that the proper variable to assess would be teacher behavior and not children's behavior since the goal of the training program was to directly affect the quality of teaching behavior and only indirectly affect the children's behavior. Therefore, a questionnaire was developed which embodied the five major content areas of the training program; this questionnaire can be seen in Appendix III. A subtotal was calculated for each of the major category areas and used as a dependent variable in the evaluation.

Observations were made by a single observer and always in the morning. The observer was naive both to the nature and goals of the training program and to the fact that some of the centers were experimental and others control. All centers were informed as to when the observer would visit, but were not told the specific nature of the visit.

A multivariate analysis of variance was performed using the training-control distinction as the independent variable and the five subcategory measures as the dependent variables. The results can be seen in Table 9. An overall significant difference was obtained between the two groups (multivariate $F(5,10) = 3.75$, $p < .04$). The discriminant function analysis revealed that the two variables contributing most heavily to the differences were Using proper methods of discipline and Developing daily schedules. The former category showed a significant difference between the groups ($F(1,14) = 5.00$, $p < .04$). Contrast scores indicated that the training group was superior to the control group on all categories except the Cognitively oriented subcategory and Awareness of developmental level. Neither of these differences, however, was significant.

The data collected indicates that the day care training program was partially successful. The overall difference between the trained centers and the control centers indicates that the program was effective in improving the overall level of functioning in the trained centers. Since, however, the only subcategory showing a significant difference between the groups was Providing appropriate methods of discipline, an expansion of the program must be suggested. An extended number of training sessions out of the centers as well as followup training in the centers themselves

Table 8

Tests of Significance between Performance of Trained Day Care Staff and Untrained Controls

Multivariate Analysis of Variance

Using Wilks Lambda Criterion

F	DFHYP	DFERR
3.751*	5.00	10.00

Univariate Analysis of Variance

Variable	F(1,14)	Standardized Discriminant Function Coefficient
Daily scheduling	1.00	0.438
Cognitive activities	0.824	-1.233
Perceptuo-motor skills	1.465	0.143
Developmental awareness	0.304	-0.438
Appropriate methods of discipline	5.000*	1.410

*$p < .05$

seem to be appropriate and natural extensions of the program.

Conclusions

This year's work with the IVY program has been both stimulating and frustrating. The failure to show an experimental versus control group difference has made the interpretation of our data more difficult, but the Year I versus Year II comparison strongly suggests that the program is working effectively--and that, in fact, overall competence among the children is increasing. Given that the behaviors selected for evaluation were age-appropirate, the children appear to be approaching the levels of national norms on most of the behaviors tested. Areas that appear troublesome includs primarily the more abstract comprehension and communication skills.

To some degree, however, those of us associated with the experimental program feel that our efforts have been at odds with certain changes in the programs for preschool education in the Baltimore City Public School System. After the winter teachers' strike--that created serious morale problems by itself--a number of curriculum changes were imposed on the IVY program. These consisted of new objectives for the program and additional evaluation techniques. The teachers in the IVY program were faced with a problem of divided loyalties as well as additional work. It is not surprising that there was a good deal of resentment among many of the teachers over what they saw as unreasonable demands.

More serious, however, is the strategy of intervention implied by the added curriculum materials. Most programs of early education seem to be based on one of two models. On the one hand are ganeralizations and extensions of traditional middle-class nursery schools with their emphasis on social-emotional growth,

discovery, etc. The implicit model here, we believe, is that the middle-class experience is the best possible environment and deviations from such experience are pathological by definition. The second model is what we would be tempted to call the "Head Start" approach and is premised on the belief that lower-income children have trouble in school because of what they don't know. This strategy generates programs to teach specific items of educational content that are typically acquired by middle-class children by the time they enter kindergarten, but that poor children often have not learned. We see each of these approaches as inherently flawed if applied in an attempt to alleviate lower-income children's school-related disadvantage.

The traditional nursery school may well be the best experience for middle-class children, but only because they do not need help from outside the home to acquire the basic skills they will need in school. For such children learning to get along with other children may be the most appropriate experience they can have. Unfortunately, for children whose early life experience may have been much more communal (Bernstein's "we" over "I" orientation) such experience may be trivial. Such children may actually need to be taught a more egocentric perspective.

Teaching specific educational content on a remedial basis also seems to miss a basic point. What lower-income children do not know compared to middle-class children is interesting only as a symptom of an underlying cause; it is not the source of the problem. If, for

example, we could shield a normal child from learning the names of basic colors until he entered the first grade, he would almost certainly know them before the first week was out--with no specific instruction. On the other hand, a lower-income child who had not learned the same colors because of reliance on context-bound communication patterns could be taught the colors and still be disadvantaged.

The program we advocate is based on the assumption that it is possible to analyze the nature of cultural disadvantagement and to intervene on its actual basis. At the heart of cultural disadvantagement, we propose, is the problem of communication. Communication in restricted codes leads to deficiencies in inter- and (possibly) intra-individual communication as well as a disbelief in one's own effectiveness, i.e., the ability to comprehend and modify one's situation. While this combination of predispositions may be both realistic and adaptive in a culture of poverty, it is absolutely destructive in an educational situation. We might assume, for example, that in some cases failure in learning to read may result from the fact that a child may not understand that the written word serves as a technique for communication. Formal education involves two basic processes--communication and comprehension--and our analysis suggests that it is in precisely these areas that lower-income children are deficient.

Finally, if our diagnosis is correct, the treatment is specified. It is not essential that any particular set of school-related skills be taught to young children, but whatever is taught must be taught with elaborated verbal communication that elicits complex thought from the child. It might be possible, of course, to teach sets of specific

intra-individual strategies related to style, but such an intervention would be unnecessary if, in fact, intra-individual strategies follow from inter-individual communication styles. Also, we would not expect such an intervention to be of lasting value because, again, we would be treating symptoms, not the fundamental problem. The only way to have a lasting influence on the child's educational future would be to effect a fundamental change in his view of the world.

Whether such a change can, in fact, be effected remains an empirical question. A decade of remedial education does not seem to have produced any earth-shaking results, possibly because it has been undertaken so far with little real thought to the psychological processes involved. There has been an almost simple-minded faith in the environmental determinants of intelligence--in the broad sense--and in the efficiency of environmental manipulation. We have argued that teaching content on a remedial basis or just placing lower-income children in middle-class nursery school environments does not have long-range effects, nor is raising psychometric IQ a suitable goal. Perhaps, however, a candid appraisal of our successes and failures will teach us to be a little more circumspect in making predictions about simple relations between environmental inputs and behavioral outcomes. The analysis presented herein suggests a complex and indirect route between what we might call a disadvantaged environment and disadvantaged behavior. The connection can only be understood, we propose, when it is viewed in the light of man's social nature.

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Appendix I

Lesson Plans Introduced in Spring of 1974

Lesson Plan for Identifying Moods in Pictures

Materials: Storybook, I'M Glad I'm Me, and three pictures taken from the story.

1) Say to the children: "Today we are going to read a story about a little boy whom we'll call Jimmy. Jimmy is a little boy who is a lot like you. When I'm reading you this story try to remember how Jimmy feels and what makes him feel that way."

2) Read the story to the children, showing them the pictures as you read.

3) When the story is finished, tell the children, "We just read a story about Jimmy. I'm going to show you some pictures of Jimmy taken from the story and I want you to tell me how he is feeling and why he feels that way.

4) Show picture #1, give the children a minute or so to look at the picture and then say: "Billy, can you tell me how you think Jimmy feels? Does he look happy or sad?"

a) If the child responds appropriately, call on another child: "Sally, have you ever felt (mood identified by the child)? What have you been doing when you felt that way?"

Allow the child time to respond; if he has difficulty, say: "What makes you (mood identified by child)?"

When correct response has been made: "Yes, that's right. John, can you tell us what makes Jimmy (mood identified)? What do you you think happened?

Allow the child to respond, and then allow the other children to guess, and have a general discussion about what makes someone whatever mood you've been talking about. When the children have given suggestions, say: "Yes, you are all right. (All the situations named by the children) will make Jimmy feel (mood identified)."

b) If the first child you ask responds inappropriately, say, "Billy, is that how you look when you are (mood identified)? Show us how you look when you are (mood identified). Okay, is that how Jimmy looks in this picture?"

Allow the child to respond and then say, "No, Jimmy doesn't look (mood identified). How does he look?" If the child mainteins an inappropriate answer, ask "Can someone else tell us how Jimmy looks?"

When another child gives an appropriate answer, say, "Yes, that's good. Jimmy looks (mood identified). Can someone else tell me what made him feel (mood identified).?"

Allow the children time to offer suggestions and then ask: "Can someone tell me what makes you feel (mood identified)?" Let the children offer suggestions.

*** This procedure is to be followed for all three pictures ***

Lesson Plan for Logical Sequencing

Materials: The Five Pennies; three pictures taken from the book (#1,2, & 3).

1) Gather the children around in a semi-circle and attach to a blackboard or other appropriate surface the three pictures. These pictures should not be in their proper order.

2) Say to the children: "Today, I am going to read you a story about a little boy. Here he is and his name is Nicky (point t the pictures). Before we read this story, we are going to figure out what he is doing. He looks like he wants to go outside, doesn't he?" (The first time you do this lesson plan, allow the children time to discuss the pictures. Do not, however, discuss them in their right order. The aim of this discussion is to make it clear to the children that picture #1 depicts Nicky putting on his hat; picture #2 depicts Nicky at the door ready to leave; and picture #3 represents Nicky waving goodbye to his mother. When this discussion is complete, return to the dialogue.) "But something is wrong with the way I put up the three pictures. They don't seem to be in the right order. Poor Nicky, he really wants to go out. Do you think we can help him?"

3) Call on a particular child saying,"Mike, can you show us which picture should come first?"

a) If the child is correct, say, "Yes, you are correct. This picture (point to #1) should come first. Can someone else tell us what Nicky is doing?" Give the children a chance to talk about the action in the picture, and emphasize to them that of the three pictures this is what Nicky would do first.

b) If the child is incorrect, say, "Mike, are you sure that of these three pictures Nicky would (describe action of the picture he chose) first?" If he maintains his incorrect answer, allow another child to help him. "Mary, can you help Mike pick the picture that should come first?" If Mary, too, is incorrect, say, "Let's see if I can help you. Before Nicky (describe action of picture incorrectly chosen), he would have to (action of picture #1). So, this picture (point to #1) would be the first thing that Nicky would do."

4) Now say, "Sally, will you show us what Nicky would do after he put on his hat? Which picture should follow the first one?"

a) If the child is correct, say, "Yes, that is right. Who can tell us what Nicky is doing now?" After a correct response, say, "Yes, you are right. Nicky is now (action of picture #2)."

b) If the child is incorrect, say, "Look again at our pictures. Are you sure (action in picture incorrectly chosen) should come right after Nicky puts on his hat?" If the child is still incorrect, allow another child to help (follow the same procedure as in 3b).

c) When the correct picture has been pointed out, say, "Can someone please tell us what Nicky has done in these two pictures in the order he should do them?" Allow the children to answer and then say, "Yes, you are correct. First Nicky (action of picture #1) and then he (action of picture #2)."

Lesson Plan for Logical Sequencing (continued)

5) Now say, "Since we have only one picture left, this must be the last thing that Nicky will do. Johnny, can you tell us what Nicky is doing in this last picture?" Allow the child time to respond and then say, "Yes, now Nicky is (action of #3). Who can tell me what Nicky should do in the right order so he can go outside (mix up the pictures)?"

6) Allow the children to do this and then say, "Now, can anyone guess where Nicky is going? Let the children discuss this and then say, "Why don't we read the story and see what Nicky is going to do." When reading the story emphasize the sequence of events.

Lesson Plan for Sequencing Events After a Story

Materials: Storybook The Five Pennies, and three pictures taken from the story (these pictures are labelled a, b, and c).

1) Reread the story to the children, again emphasizing the sequence of events. When you are finished, place on a blackboard, or some other appropriate surface, the three pictures (a,b,c) in the wrong order.

Then say, "You just saw these pictures in our story about Nicky. But it looks as if I got them mixed up. They're not in the order in which they happened. What I want you to do is put them in the order in which Nicky did them. But before we do this, let's talk about what is happening in each picture."

Let the children talk about each picture and what is going on (discuss the pictures in the order which you have them on the board, not in the order they actually occurred in the story).

2) When the children have discussed this, say: "Now, Bobbie, can you tell us which picture of Nicky came first in our story?"

a) If the child is correct, say: "Yes, Bobbie, first Nicky did (action of picture a)."

b) If the child is incorrect, say: "Are you sure that Nicky (action of picture the child incorrectly chose) before the other two pictures?" If the child remains incorrect, call on another child to help. If both children cannot get the right picture, say: "Let me see if I can help you. In the story Nicky first (action of picture a). Can you point to the picture which shows this? That's right. The first thing Nicky did was (action of picture a)."

3) Next ask the children: "First Nicky did (action of a). What did he do after this? Betty, can you show us?"

a) If the child is correct, say: "That's right. After Nicky did (action of a), then he (action of b)."

b) If the child is incorrect, follow the same procedure as 2b, stressing which picture comes after picture a.

4) When the children have correcly identified picture b, say, "Since this picture (point to c) is the only one left, it must be the last thing Nicky did in these three pictures. What is the last thing Nicky did? Susie, can you tell us?"

When a child has responded correctly, allow several children to put the pictures in order (mix them up again and then ask the children to sequence them), as they describe the actions in the pictures.

Appendix II

Curriculum Objectives Constructed by IVY Project Manager

Curriculum Objectives Constructed by IVI Project Manager

Visual Perception

Identifies printed name.

Identifies body parts (language describes function).

Identifies self, peers, teacher in a photograph.

Given a picture, a child can identify at least 4 distinct objects.

Names missing parts from the whole.

Selects missing parts from the whole.

The child can arrange pictures in order.

The child will state the order in which he follows a simple task.

The child will tell an event that happened before or after a given event.

The child can group 3 pictures of similar ideas.

The child can make inferences from pictures about the actions, characters, and settings.

The child can identify moods found in pictures.

Given three pictures, the child will sequence them in left to right order.

Auditory Perception

Can distinguish likenesses and differences in sounds:

a. loud and soft
b. near and far
c. high and low
d. difference in instruments
e. pitch

The child will follow 3 verbal directions.

The child will hear and repeat sound sequences.

The child will repeat a non-verbal sound pattern.

The child will identify rhyming elements in words.

The child will repeat a short oral direction.

Curriculum Objectives (continued)

Concept Formation with Vocabulary Words

I. Classification

Same/not the same/different

Some/all

Things go together because ...

II. Seriation

Big/little (littler, bigger, even bigger, biggest)

Large/small

Tall/short

High/low

Long/short

Fat/thin

Ordering numbers to five (first, second, third, fourth, fifth)

Some/more/less with respect to number groupings

Soft/hard (soft, harder, hardest)

Loud/quiet

Fast/slow

Smooth/rough

Hot/cold

Heavy/light

III. Spatial Relations

On/off

On top of/over/under

In/out

Into/out of

Top/bottom

Above/below

In front of/in back of/behind

Curriculum Objectives (continued)

Beside/by/next to

Between

First/next/last

Up/down

Forward/backward

Around/through

To/from

Forward/away from

Sideways

Across

Near/far

Close to/far from

IV. Temporal Relations

Start/go/stop

At the same time/now

Start/finish

Begin/end

First/last

Next/again

A short time, a shorter time

A long time, a longer time

Appendix III

Day Care Observation Questionnaire

Observation Checklist for Day Care Centers

I. Daily Structure

1. Is the morning divided into fixed activity units (e.g., free play, story time, juice time, etc.)?

2. Are activity units kept in a fixed order from day to day?

3. Is the room set up for specific lessons before the children arrive?

4. Are specific lessons planned for rather than spontaneous?

II. Concept Inclusion

1. Do artistic activities (cut & paste, finger paint, crafts) incorporate any of the following?

   color____ shape ____ size ____ body parts ____

   animals ____ other _____

2. Do motor skill activities (blocks, peg board) incorporate any of the following?

   color____ shape ____ size____ body parts____

   animals____ other_____

3. Do music activities incorporate any of the following?

   color____ shape____ size____ body parts____

   animals____ other_____

4. Does story telling incorporate any of the following?

   color____ shape____ size____ body parts____

   animals____ other _____

5. Is there a theme to the room (summer, colors, etc.)?

6. Are the morning's activities connected by a theme?

III. Perceptual-motor skills

1. Does the teacher use sound discrimination lessons?

2. Does the teacher use texture discrimination lessons?

3. Are the children given time outdoors?

III. Perceptual-motor skills (continued)

4. Is there large muscle equipment available outdoors?

5. Is there large muscle equipment available indoors?

IV. Developmental Awareness

1. Are children divided into age-appropriate groups for activities?

2. Are children divided into ability-appropriate groups for activities?

V. Discipline

1. Does the teacher scold children who misbehave?

2. Does the teacher redirect attention when children misbehave or when there is conflict?

3. Does the teacher use rewarding or approving language?

4. Does the teacher use light physical punishment?