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A STUDY OF THE LONG-TERM EFFECTS OF A HUMAN DEVELOPMENT PROGRAM ON THE INTELLECTUAL PERFORMANCE, SCHOOL ACHIEVEMENT, AND AUDITORY-VERBAL LEARNING APTITUDE OF ECONOMICALLY DISADVANTAGED CHILDREN

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CHAPTER I

THE PROBLEM

The problem of school failure by large numbers of children from the lower-income sectors of American society has led educators to investigate the educationally-relevant differences which children from low-income families bring to the classroom for the purpose of determining the instructional methods and situations that schools must provide to accommodate the educationally-relevant differences of economically-disadvantaged children. Social class differences in language use has been cited by all investigators as a major factor in the school failure of economically-disadvantaged children (Brottman, 1968; Bruner, 1971; Cazden, 1972; Cazden, John, and Hymes, 1972; Corbin and Crosby, 1965; Gahagan and Gahagan, 1970, Lavatelli, 1971; Strodtbeck, 1967). Recent reviews of the research on language use differences between children from different social class groups (Bruner, 1971; Moore, 1971b) indicate that a major difference focuses on what Moore (1971b) refers to as the referential use of language. The literature indicates that the use of language to convey precise reference, as demanded in school contexts, is met inadequately by lower-class children, that this type of language usage is particularly important to educability, and should, therefore, serve as an important focus in preschool curriculums designed to enhance the school readiness of economically-disadvantaged children.

To date, the differentiating characteristic of experimental preschool curriculums producing the largest gains on measurements of school readiness with economically-disadvantaged children, when the variables of operational quality and overall program structure are held constant, has been a large quantity of highly structured and systematic language interaction between teacher and child of a precise referential nature (Bissell, 1973; Moore, 1971a) as exemplified in the Bereiter and Englemann (1966) experimental program. The question has been raised, however, (Cazden, 1971a; Miller and Dyer, 1970) as to the meaning of the significantly greater gain scores obtained in the highly-structured language programs in which specific verbal responses of a precise referential nature are required of the child. To date, virtually nothing is known about how to interpret the fact that such programs do affect children's scores on measures of school readiness.

Investigators adhering to a verbal deprivation hypothesis reason that the average lower-class child is characterized by a relative lack of ability in the use of many of the specific speech forms which are used to organize meanings of a precise referential nature: (a) elaborated syntax, (b) superordinate class names, (c) uncommon adjectives, (d) uncommon adverbs, (e) logical connectives, (f) negatives, and (g) the reversal of conjoined words and phrases (Moore, 1971b). Their reasoning is that, even though many low-income children may possess the requisite grammatical competence, they remain relatively deficient in the use of this competence as it applies to the speech forms associated with precise reference. A popular proposal, therefore, is that low-income children need a highly-structured training situation which focuses on teaching the use of speech forms which convey precise referential meanings (Bereiter and Englemann, 1966; Moore, 1971b; Osborn, 1968). Such an approach, exemplified in the Bereiter and Englemann (1966) program, often makes extensive use of structured drill and repetition and sentence imitation, much the same way that pattern drills are used in teaching a foreign language. The gain scores produced in such training situations reflect, presumably, an acquisition, on the child's part, of the ability to use precise referential speech forms, which, in turn, enable him to operate more effectively in abstract communication situations requiring the exchange of precise referential meanings, such as those in which measurements of school readiness are administered.

Recent sociolinguistic research into the contextual dependence of language use has revealed that many low-income children are not lacking in the ability to use the forms of precise referential speech (Cazden, 1970, 1972). The research strongly suggests that many low-income children are quite capable of using precise referential speech, but that certain social variables in standardized, adult-mediated, interview settings often depress their use of precise referential speech. Bernstein (1972a, 1972b) is the major spokesman for the sociolinguistic point of view. He maintains that lower-class children, often, are reluctant to employ, or do not see the necessity of employing, their language to convey precise referential meanings, due mainly to the social implications of this type of language usage and to its divergence from their preferred social orientation. The educational implication of Bernstein's reasoning is that lower-class children need an educational methodology and situation which focus on broadening role repertories to include those dependent upon the use of precise referential speech and that this is done most effectively by structuring social contexts in which lower-class children have an opportunity to perform in relatively unfamiliar roles with their new and demanding communication requirements (Cazden, 1968). Such an approach focuses on teaching the functions of precise referential speech, rather than its forms.

According to Bernstein's theory, any educational program which actively involves the child and teacher in an intensive exchange of precise, referential speech is, at the same time, providing for the child practice in the type of formalized, adult-child role relationship found in standard classroom situations--practice which, in turn, expands the child's social role repertorie, thereby enabling him to more easily engage himself in a formalized, classroom-type social relationship, with its particular speech function requirements, in other school-type settings, not to exclude standardized testing situations. According to Bernstein's reasoning, the success of the current, highly-structured language teaching methodologies has not been due to the acquisition of new speech forms, per se, but due, instead, to becoming practiced in, and accustomed to, a relatively unfamiliar social role and speech function engagement with adults, thereby enabling the implementation of speech forms already possessed. In short, the gain scores have represented an important part of becoming socialized to the role and speech function requirements of school-type situations.

Many investigators adhering to a sociolinguistic view (Bernstein, 1972b; Cazden, 1970; Ervin-Tripp, 1973; Kochman, 1972; Labov, 1970) argue that, even though the immediate test gains obtained with economically-disadvantaged children in highly-structured language programs have been impressive, the verbal-deprivation hypothesis on which such programs are based, and their consequent "compensatory" approach to teaching the forms of precise reference, are theoretically unsound, and potentially detrimental to the education of these children. One of the major educational implications of Bernstein's theorizing is that in formulating any educational program to enhance the school readiness of low-income children, the primary emphasis should be placed on the social context within which interpersonal communication occurs so as to extend the social role and speech function repertoires of children from low-income families. In experimental preschool compensatory language programs to date, many of which are based on Bernstein's theorizing, an effort to extend social role and speech function repertoires has not been the primary emphasis. Overall, experimental preschool compensatory language programs seem to focus on teaching the forms of precise referential speech rather than the function, even though Bernstein's significant contribution has been how the two are related.

The purpose of the present study was to explore the implications of Bernstein's theory of social class difference in educability, as it applies to designing the contents and contexts of a preschool curriculum, by determining the long-range effects of a human development/communications, curriculum on the school achievement, intellectual performance, and auditory-verbal learning aptitude of economically-disadvantaged children. More specifically, the purpose of the present study was to compare the long-range school achievement, intellectual performance, and auditory-verbal learning aptitude of fifth and sixth grade children who were enrolled, as four and five year olds, in a traditional preschool classroom in which the <u>Methods in Human Development</u> (Bessell and Palomares, 1967) curriculum was implemented, with the school achievement, intellectual performance, and auditory-verbal learning aptitude of fifth and sixth grade children who were enrolled in a traditional preschool classroom with no exposure to the Bessell-Palomares Human Development curriculum.

CHAPTER II

REVIEW OF THE LITERATURE

Intervention Rationales

Language Deficit Theories

During the decade of the 60's in the United States the most prevalent theories regarding the problem of school failure of large numbers of children from the lower-income sectors of American society centered on deficits in the verbal and cognitive development of economically-disadvantaged children (Cole and Bruner, 1971). Within the deficit interpretations, there were two general schools of thought. The less popular position, sometimes referred to as the geneticist position (Jensen, 1969), asserted that children from low-income families, as a result of genetic inheritance, were deficient in the ability to think abstractly and thereby unable to participate in conceptual learning.

The other school of thought within the deficit interpretation stressed environmental, as opposed to genetic, factors and gave rise to the notion of cultural deprivation (Labov, 1970). The cultural deprivation hypothesis rested on the assumption that a child living under conditions of poverty was living in a physically and socially disorganized environment; that this disorganization retarded children's speech; that inferior speech generated deficient thought; and that deficient speech and thought expressed themselves in lowered test scores and academic performance. The cultural deprivation line of reasoning, often referred to as the verbal deprivation hypothesis, characterized the majority of the deficit theorists (Bereiter and Englemann, 1966; Deutsch, 1967; Klaus and Gray, 1968; Hess and Shipman, 1965). The theory of educational intervention that grew from the verbal deprivation hypothesis was the idea of early language stimulation. The nature, however, of the needed stimulation was never explained systematically, save in rare cases (Bereiter and Englemann, 1966), and there was little agreement about the content, form, or time necessary to increase language performance (Brottman, 1968).

Language Difference Theory

In the mid-60's a small group of linguists interested in the school language problems of lower-class children began to develop a counterargument to the verbal deprivation theory. Most of what came to be known as the difference position on language emanated from the writings of Stewart (1970), Shuy (1970), Labov (1970), and Baratz (1970). The position taken by these researchers, and by most linguists today, was that

> speech variations among groups of people. . . reflected distinctions among quite normal, and well-developed, but different linguistic or dialect systems. . .(and) that no natural language or dialect could really be considered more primitive, rudimentary, or underdeveloped than another. (Williams, 1970, p. 5)

According to the language difference position, the presumed verbal deficits observed among low-income children were, often, a reflection of language differences and that the observed discrepancy between the demands of the school and the performance of the child was often a consequence of forcing a child to perform in a linguistic system other than his primary one. The educational implication of this line of reasoning came to be known as teaching-English-as-a-second-language (Baratz, 1970).

Rejection of the Deficit and Difference Theories

Since the late 1960's a growing body of data and theory in the fields of psychology, psycholinguistics, and sociolinguistics has begun to cast serious doubt on the conclusion that a language or intellectual deficit exists in low-income children and, even, has begun to raise doubts as to whether the language differences found to exist among different cultural and social-class groups are, indeed, relevant to educability. Reviews of the literature of the current theory and research pertaining to social-class differences in language and cognitive development (Bruner, 1971; Cazden, 1972; Cole and Bruner, 1971 ; Ginsburg, 1972; and Moore, 1971b) strongly suggest that children of different social classes do not differ significantly in the rules that govern their language, nor in the amount of language they possess, nor in their fundamental capacity for logical analysis and conceptual thought. On the basis of such literature, there has been a growing recognition among investigators that the critical issue involved in differential school success among children from different social classes is not to be found in language competence (implicit knowledge of language structure), and that the development of a child's grammatical competence is not an important focus for a compensatory language program (Moore, 1971b).

An additional body of theory and data leading to rejection of the deficit theory stems from a long observed and common-sense distinction in psychological research between performance of a particular act and the capability to perform that act, and from contemporary psychology's recognition of the task and situation specific determinants of performance, particularly within the context of comparative research (Glick, 1968; Kagan and Kogan, 1970; Osser, 1971; Severson and Guest, 1970; Zimiles, 1970). Recognition of situation specific determinants of performance within the context of comparative research has led many investigators (Cazden, 1970, 1972; Drucker, 1971; Goffman, 1964; Labov, 1970; Leacock, 1971) to view standard experimental methods and assessment procedures as inadequate when applied to the investigation of subcultural differences. These investigators adhere to the position

> that even when attempts have been made to provide reasonable linguistic foundations, the conclusions about cognitive capacity from psychological experiments are unfounded because the performance produced represents a complex interaction of the formal characteristics of the experiment and the social/environmental context that determines the subject's interpretation of the situation in which it occurs. (Cole and Bruner, 1971, p. 868)

The argument that standard assessment situations do not measure the intellectual or language competence of many low-income children has been supported by recent studies which demonstrate that the performance of low-income children can vary with situational characteristics, revealing demonstrations of competence where its lack, previously, had been inferred (Cazden, 1970, 1972; Jensen, 1969; Labov, 1970; Palmer, 1970; Zigler, Abelson, and Seitz, 1973; Zigler and Butterfield, 1968).

Cazden (1970, 1972) has proposed that aspects of a standardized interview setting may be a neglected source of social class difference in child speech and suggests the possibility of two different relationships. On the one hand, she proposes that aspects of the interview situation may produce differential responses which are intensified for lower-class speakers. For example, all children may be constrained in a testing situation, but lower-class children especially so (Cazden, 1972). Such a study is reported by Zigler, Abelson, and Seitz (1973) in which lower- and middle-class children were found to be constrained in their initial responses to a standardized vocabulary test, but lower-class children found to be significantly more constrained than middle-class children. On the other hand, Cazden (1972) proposes that there may be disordinal interactions between the level of language performance and the situation, in which the relationships are reversed for the different social class groups, rather than varying in intensity. For example, middle-class children may be more fluent in one set of situations, while lower-class children talk more fluently in another (Cazden, 1972). Such a study is reported by Bernstein's associates, G. T. Turner and R. E. Pickvance (1971) in their examination of children's speech in London.

Cazden's (1972) concern is with the situational performance differences between subcultural groups. She recommends that varied situations be used to obtain a more stable index of a child's language performance. Her view is that the relatively poor language performance of lower-class children in standardized interview situations is, at least, in part, a reflection of situational constraints. Her thinking reflects a more recent line of speculation concerning the school language problems of lower-class children which has arisen from the rapidly developing field of developmental sociolinguistics.

Sociolinguistic Theory

In the systematic study of situational language performance differences among children from different social class groups (Cazden, 1970,1972;

Cazden, John and Hymes, 1972; Gumperz and Hymes, 1972) sociolinguistics are becoming aware of a relationship between particular speech function orientations and social class membership which may have educational implications (Osser, 1971). Hymes (1972), for example, has proposed that there may be differences, and even interference, between speech function demands placed on children outside the classroom and speech function requirements of the school.

> Those brought together in classrooms, even though having the language of the classroom in common, may not be wholly members of the same speech community. They may share a speech situation, but bring to it different modes of using its language and of interpreting the speech that goes on there. (Hymes, 1972, p. xxxviii)

In a sociolinguistic approach to the school language problems of low-income children, investigators are attempting to specify the ways in which the social situation of the classroom interacts with characteristics of the children to determine their speech behavior within that setting. To this end, Cazden (1970, 1972) has developed a typology for describing situational variables as they affect communication in classroom and testing situations.

Based on Cazden's work, it is useful for the purpose of this paper to distinguish two broad types of situational influences on speech behavior in school-type contexts, which the author will characterize as the role demands and speech function requirements of the school setting. Role demands include such variables as the respective status and role positions assumed by the conversants, their attitudes toward their status and role positions, their attitudes toward the various uses to which speech is put, and their motives in a particular speech situation. Speech function requirements include such factors as the extent to which verbal display of knowledge is required; the extent to which speakers are expected to go beyond minimal communicative demands, the degree of verbal explicitness required to communicate a given message, and the extent to which props within the situation and shared backgrounds of experience can be used to ease the burden of verbal explicitness.

Bernstein's Theory

An Overview

With respect to social class differences in school performance and discrepancies between the role demands and speech function requirements of the school and home environments, challenging hypotheses have been formulated by Basil Bernstein, professor in the Sociology of Education and director of the Sociological Research Unit, University of London Institute of Education. His sociolinguistic theorizing regarding the educational implications of social class difference in language use has been explicated in a number of papers over the last 18 years (Bernstein, 1958, 1959, 1960, 1961a, 1961b, 1962a, 1962b, 1964, 1967, 1972a, 1972b). Although Bernstein's terminology has changed somewhat since his early papers, his basic propositions seem to have remained unchanged. He postulates the existence of two distinct modes of communication: elaborated and restricted coding, both of which occur within the grammatical rule system of a single language. He proposes that these different modes of communication are generated by different types of role relations, or, more generally, by different social structures. He proposes that the role structure of lower-socioeconomic families generates a predominant sociolinguistic orientation toward the use of restricted coding, while the role structure of middle-class families generates a sociolinguistic orientation toward a broader range of language use, which includes both restricted and elaborated coding. Finally, Bernstein proposes that children predominantly oriented toward restricted coding will have a major problem of educability.

Elaborated and Restricted Coding-Functional Distinctions

Bernstein draws a major functional distinction between restricted and elaborated coding according to the extent to which each facilitates (elaborated coding) or inhibits (restricted coding) an orientation to symbolize intent in a verbally explicit form (Bernstein, 1967). From another perspective, Bernstein defines this distinction in terms of the "orders of meaning" conveyed by each type of coding: (a) the predominant use of "particularistic," relatively context-specific meanings in restricted coding, and (b) the predominant use of "universalistic," relatively context-free, meanings in elaborated coding (Bernstein, 1972a).

Elaborated and Restricted Coding-Social Origins

Bernstein (1972b) also distinguishes between elaborated and restricted coding in terms of their social origins and in terms of the types of role relations they function to define and reinforce. According to Bernstein, the social situation giving rise to a restricted code is one in which the form of the social relation is based upon closely shared identifications, upon an extensive range of shared expectations, upon a range of common assumptions. The restricted code, in turn, functions to define and reinforce a form of social relation based upon the idea of closely-shared identifications, expectations and common assumptions by conveying shared, communalized meanings and restricting the verbal signaling of individual experience. In as much as restricted coding is oriented toward a social category or status, rather than a person, it is referred to as a "status" or "positional" code. When the restricted code is used, communalized roles take precedence over individualized roles, and condensed, communal symbols take precedence over articulated, individualized symbols.

Bernstein (1972b) maintains that the most general condition for the emergence of elaborated coding is a social relationship based upon the idea of individual difference, a relationship in which the intent of the other person cannot be taken for granted, and dependent, therefore, upon individual intents being made verbally explicit. The elaborated code, in turn, functions to define and reinforce a form of social relation based upon the idea of individual difference by conveying explicit individualized meanings. In as much as elaborated coding is oriented toward a person, rather than a social category or status, it is referred to as a "person-oriented" code. When this code is used, individualized roles take precedence over communalized roles, articulated symbols over condensed, communal symbols.

Elaborated and Restricted Coding-Social Class Differences

Central to Bernstein's work is the proposition that the basic communication structure, i.e., the one which makes substantive the culture or subculture through its control over the linguistic realizations of contexts critical to the socialization process (Bernstein, 1970), of some groups is controlled predominantly by an elaborated code, while the deep communication structure of others is controlled predominantly by a restricted code. Bernstein (1972b) proposes that individuals predominantly oriented toward restricted coding will be found primarily among the lower working class, their orientation toward restricted coding being due, primarily, to the nature of their work relationships, their community relationships, and their family role systems. He is careful to point out, however, that

> because a code is restricted does not mean that a child is nonverbal, nor is he in the technical sense linguistically deprived, for he possesses the same tacit understanding of the linguistic rule system as any child. It simply means that there is a restriction on the contexts and on the conditions which will orient the child to universalistic orders of meaning, and to making those linguistic choices through which such meanings are realized, and so made public. It does not mean that the children cannot produce at any time elaborated speech in particular contexts. (Bernstein, 1972a, p. 146)

Recent reviews of the research (Cazden, 1970, 1972; Moore, 1971b) examining situation-specific social class differences in the verbal explicitness of young children have revealed findings consistent with Bernstein's analysis of social-class differences in the use of elaborated and restricted coding. These research findings have indicated that in formally-structured, adult-mediated interview situations, where there is little constraint for explicit elaboration, lower-class children are more likely to meet only the minimal communicative demands, without elaboration or explicitness. Middle-class children, on the other hand, are more likely to go beyond the minimal demands and offer explicit, elaborated, context-independent messages. Several of the studies reviewed found that under a condition of additional constraint for elaboration, the performance of lower-class children was far superior to their performance in a standardized situation where the amount of probing was controlled (Heider, Cazden, Brown, 1968; Lawton, 1968; Williams and Naremore, 1969). These findings are in keeping with Bernstein's (1972a) theorizing that lower-class children do, in fact, have access to, and can use, speech for making explicit observations, but that there is a restriction, relative to the middle-class child, on the contexts which will evoke such usage. Bernstein (1972a) maintains that formally-framed contexts are apt to evoke in the working-class child, relative to the middle-class child, a restricted style of speech, because the working-class child has difficulty in managing the role relationships such contexts require.

Also consistent with Bernstein's hypothesis of social-class related elaborated and restricted coding were the results of several investigations reviewed by Moore (1971b) and Cazden (1970, 1972), in which social-class differences in speech elaboration and explicitness failed to appear. These studies investigated situations which could be characterized as "very informal" to "intimate," in which there was a great deal of shared information between speakers, where most of the objects or persons discussed were perceptually present, and where there was, therefore, little need for precise specification of personal intents and meanings. According to Bernstein's (1972a, 1972b) theorizing these types of social contexts tend to elicit restricted coding regardless of social class. Bernstein suggests that, while middle-class and lower-class speakers probably utilize context in much the same manner when speaking casually to family members, and close friends, noncasual speech becomes very formalized and precise in middle-class groups.

An important aspect of Bernstein's theorizing and research regarding the dynamics of social-class related elaborated and restricted coding has been an examination of social-class differences in patterns of maternal communication and control and an examination of the relationship between maternal patterns of communication and control and the child's socialization, considering particularly the child's mode of communication and his response to school. Research working under the direction of Bernstein at the University of London Institute of Education, Sociological Research Unit, from 1965 to 1967, obtained information on maternal patterns of communication and control within the home through interviews with a sample of 312 working-class and middle-class mothers before their children started infant school at five years of age and again in the last year of the infant school when the children were seven years of age (Bernstein and Brandis, 1970; Bernstein and Henderson, 1969; Bernstein and Young, 1967; Henderson, 1970). From the information obtained in the mothers' interview reports, an Index of Communication and Control (ICC) was established, which gave some indication of the mothers' orientation towards the relevance of language, independent of the number of children in the families and the child's ordinal position. A mother with a high score on this index encouraged her child's conversation and questions across a range of contexts and emphasized the use of language for purposes of explanation and control. Bernstein and Brandis (1970) found a strong association for the whole sample of mothers between the social class ratings of the parents and the score on the ICC, indicating that according to the mothers' interview reports, the social class differed significantly in their use of language for purposes of explanation and control and in the willingness of mothers to respond to communication initiated by their children.

Findings obtained from the mothers' responses revealed social class differences in: (a) the emphasis upon language in different contexts, (b) the contextual specificity of the verbal communications of the mothers, and (c) how mothers explained the meanings of words to their children. These findings were summarized by Henderson (1970). In regard to language emphasis, Henderson reported: (a) that the middle-class mothers were more likely, than the working-class mothers, to chat to their children across a range of contexts, (b) that the middle-class mothers placed a relatively greater emphasis, than did the working-class mothers, upon the use of language in the socialization of their children into person relationships, (c) that the working-class mothers placed a relatively greater emphasis, than did the middle-class mothers, upon the use of language in the socialization of their children into elementary skills, and (d) that middle-class mothers, in the socialization of their children into elementary skills, placed greater emphasis on the use of language in the transmission of principles, than did the working-class mothers.

In regard to the contextual specificity of maternal communication, Henderson (1970) reported: (a) that the explanatory style of the middle-class mothers appeared to be more contingent upon the problem--her explanations appeared to be more contextually specific, and (b) that the middle-class mothers made a much clearer differentiation between the use of language in the skill and person area--that although all mothers reported a greater emphasis upon the use of language in socializing their child into person relationships, rather than into elementary skills, the shift was five times as great in the middle-class group from one area to the other, but only two and a half times in the case of the working-class group.

In regard to social class differences in how mothers explained the meanings of words to their children, Henderson (1970) summarized the findings obtained from the mothers reports as follows:

> ...middle class mothers were not only more likely to aim primarily at a higher level of generality or abstraction when defining words for their children, but also...when they considered it necessary to give a concrete example, the example chosen was more explicit and precise than the examples chosen by working class mothers...Whilst the data at our disposal from this schedule does not allow us to make any firm interpretation in terms of maternal teaching styles, we think the results here may reflect a tendency towards a deductive teaching style on the part of the middle class mothers, and an inductive teaching style on the part of the working class mothers. Minimally, our justification for this hypothesis is based upon the overwhelming number of general definitions chosen by middle class mothers as their primary response, and upon the much greater incidence of concrete examples among the primary responses of working class mothers. This is not to say the middle class mothers do not give concrete examples, and that working class mothers do not give general definitions. Middle class mothers move from the general to the specific, whereas the working class mothers, when they use a general definition, rank it below a concrete example. They move from the specific to the general. (p. 66)

Bernstein and Brandis (1970) had predicted that measures of the child's language and intellectual ability would be more highly correlated with such indices of the mothers' behavior as the ICC than with the more global variable of social class. This prediction was borne out for the 174 children within the working class schools of the Bernstein and Brandis (1970) study. Within the middle class schools, on the other hand, the language and intellectual ability test scores were more related to social class, because, according to Bernstein and Brandis (1970), the index was not sufficiently sensitive to discriminate between mothers in the middle class area. In spite of these mixed results, which the investigators suggested were due to imperfect instruments, Cazden (1968) has reported on research by Bloom (1964), Dave (1964) and Wolf (1964) which does lend support to Bernstein's predictions:

> Wolf and Dave found correlations of 0.76 and 0.80 between 60 fifth grade children's IQ and school achievement scores respectively and 22 process variables measured in a home interview. Four of the 22 variables dealt with the parents' attitudes toward language, e.g., 'Opportunities provided for enlarging vocabulary' and 'Quality of language models available.' By contrast the correlations between intelligence or achievement and status variables such as social class were only about 0.40, (p. 607)

In the United States, it is, perhaps, the studies of Bee, Van Egeren, Streissguth, Nyman, and Leckie (1969), Brophy (1970), and Hess, Shipman, Brophy, and Bear (1968, 1969), inspired by Bernstein, that have done the most to draw attention to social class differences in how speech is used in communicating with young children, and to the educational implications of this difference. In their study with 163 non-working Negro mothers and their four year old children, Hess and Shipman (1965) reported a social class difference in the mothers' tendency to use different types of control strategies in interview reports of how they would deal with their children in instances when some question of relationship to authority arose. Two general types of maternal control strategies were defined: (a) imperative-normative, and (b) personal-subjective. In accordance with Bernstein's theorizing, the significance of these maternal control strategies was found in the extent to which they required complex verbal communication on the mother's part and in the extent to which they oriented the child toward an active, person-oriented role and speech relationship with adults. The imperative-normative control strategy was characterized by short, pre-emptory maternal commands, or by brief instruction to conform to an unquestioned status quo; the information provided the child in this strategy was limited and the child's response alternatives were narrow in scope. The imperative-normative strategy was believed to orient the child toward a passive, compliant, and unquestioning role and speech relationship with adults. The personal-subjective control strategy, on the other hand, was characterized by a more verbally-specific and complex mode of communication in which explicit verbal attention was paid to the personal considerations, feelings, and preferences of the participants. The personal-subjective strategy was believed to orient the child toward a sensitivity to the personal intents, meanings, and motivations of other persons and toward a more active speaking and learning style, one more alert to seeing a situation from several vantage points. Hess and Shipman (1965) reported that the middle-class mothers in their study used significantly fewer imperative-normative control strategies and more personal-subjective control strategies than did the lower-class subjects.

Bee, Van Egeren, Pytkowicz, Nyman, and Leckie (1969) obtained similar findings from observations of mother-child interactions in both structured and unstructured situations. They found that the middle-class mothers, regardless of the situation, used more instruction, less physical intrusion, less negative feedback, and more complex speech patterns, than did the lower-class mothers.

Hess and Shipman (1967) reported a significant association between the pattern of maternal control strategies and the child's cognitive performance. Children of mothers who used imperative-normative control strategies generally performed at a lower level on cognitive measures than children of mothers oriented toward personal-subjective control strategies.

Another aspect of Hess and Shipman's study was an examination of Bernstein's hypothesis regarding social class differences in maternal communication within instructional contexts. Hess and Shipman (1967) reported that, compared with working-class subjects, middle-class mothers, within the context of teaching their child a specific task in a laboratory setting, relied less on physical feedback, preferred motivating the child to controlling through implied threat, gave more orientation to the task, reinforced correct responses more than errors, and used more specific language. These differences in favor of the middle class were all in the direction of greater success at the task.

Brophy (1970) conducted a further analysis of the Hess and Shipman (1965) data on maternal teaching behavior and found that middle-class mothers prepared their children for the task more adequately than did lower-class mothers, in the sense of setting up well-defined guidelines for the task, with access to principles as well as operations. Bee, Van Egeren, Pytkowicz, Nyman, and Leckie (1969) obtained similar results. They found that middle-class mothers gave more "orienting" suggestions than lower-class mothers in a structured teaching situation.

Hess and Shipman (1967) reported that several social class differences in maternal teaching behavior were correlated significantly with the children's intelligence data and with measures of the children's learning. One was the lower-class mothers' tendency to use imperative, status-oriented statements in attempting to seek physical feedback, which correlated negatively with aspects of the child's cognitive performance. Another was the middle-class mother's tendency to require discriminations in her teaching behavior, which correlated positively with the child's cognitive performance. Another was the middle-class mother's tendency to orient her child to the task, which correlated positively with the child's cognitive performance.

In support of Bernstein's prediction that measures of the child's language and intellectual ability would be more highly correlated with aspects of maternal communication and control than with the more global variable of social class, Hess and Shipman (1967) reported that certain aspects of the maternal teaching behavior (specificity and precision in orienting the child to the task, specificity in giving directions, and the use of models during the teaching of a task) were better predictors of the child's cognitive performance within the teaching situation than a combined index of mother's I.Q., the child's I.Q., and social class. Hess and Shipman (1968) reported that this general pattern was repeated in other sectors of the data:

> The child's performance on cognitive tasks is associated with specific maternal behavioral variables at a level comparable to or higher than that obtained by the more traditional measures of maternal I.Q. and social class. (p. 103)

Hess (1969) reported on a followup study of the children's performance during their first two years of school in which a number of maternal variables from the preschool study were found significantly related to the child's performance in school as measured by standardized tests and as evaluated by the teacher:

> Maternal control strategies...seemed at least as strongly associated with conduct as with academic grades and standardized test scores. The child who did well in school was likely to have a mother who stressed personal-subjective control strategies and avoided the use of either imperative or status-normative control strategies.

> Children who received high academic grades and high objective test scores were also likely to have mothers who showed effective teaching styles in the preschool study. Their mothers tended to be specific in giving directions and feedback, to orient the child to the task, to elicit cooperation and give praise, and to avoid demanding physical actions without accompanying the demands with rationales. (p. 14)

Educational Implications

Bernstein (1972a) defines the school as an agency whose basic function is to introduce the child to the use of the "universalistic" meanings of public forms of speech. In practice, this involves the development of an elaborated coding style which functions to make verbally-explicit the principles and operations that apply to objects and object relations (science subjects) and to persons and person relations (art subjects). Bernstein (1972a) maintains that in order to meet the speech function requirements of the schools' elaborated coding style, a child must be able to adapt to its underlying, person-oriented role requirements. Bernstein (1961b) proposes that the middle-class child, through his early socialization experiences, has learned to use both restricted and elaborated coding, according to the social context, and can manage the role relationships of both. The lower-class child, on the other hand, tends to be at a disadvantage in the typical school setting because his accustomed way of interacting with adults (his status-oriented role orientation, his relatively passive learning style, and his preference for exchanging implicit, context-dependent meanings) is in conflict with the type of adult-child interaction required in school. Bernstein (1972a) suggests, therefore, that the educationally-relevant difference that low-income children bring to the classroom can be understood on one level

> in terms of a confrontation between the universalistic orders of meaning and the social relationships which generate them, of the school, and the particularistic orders of meanings and the social relationships which generate them, which the child brings to school. (p. 146)

Implications for Redesigning Instructional Methods and Situations

Cazden (1968) suggests that in as much as Bernstein emphasizes the importance of the impact of role relationships on language usage, it would follow that in formulating a preschool educational methodology to broaden the range of speech functions of low-income children to include those of elaborated coding, the primary focus would be on the nature of the context for social interaction in the classroom. If the use of speech to convey "universalistic meanings" is, indeed, casually related to individualized roles and to social relationships based on differences and if, indeed, lower-class children are relatively unpracticed in such roles and do not move toward these roles spontaneously, then it would seem reasonable to work toward creating social contexts which provide lower-class children the opportunity to function in these new roles, so as to extend their role and speech function repertoire to include those that will be expected of them in the public school setting. In Bernstein's own words, "changes in codes involve changes in role relationships and in procedure of social control (1972b, p. 494)."

Bernstein (1961b) and Cazden (1968), both, have noted that opportunities to practice these new roles do not appear prevalent in American primary classrooms today, especially in cities, and more especially in urban slums.

> Large classes reduce the possibility of individual teaching, maximize impersonal, authoritarian methods of class

> control, and increase the passivity of the lower-working-class pupil. (Bernstein, 1961b, p. 305)

> The prevailing climate is more like the climate in which the restricted code is presumably generated in the first place: order and discipline valued above all and exploration--both physical and verbal--virtually prohibited. (Cazden, 1968, p. 609)

Bernstein (1961b) sees a reduced class size as the essential strategy in altering basic classroom conditions for the purpose of providing a more conductive atmosphere within which to practice individualized roles and the exchange of explicit, individualized meanings. According to Bernstein, the smaller class size would allow the establishment of an "interpersonal" rather than an "intergroup" relationship between teacher and pupil.

Another basic condition proposed by Bernstein for establishing an atmosphere within which to establish person-oriented role relationships is that of meaningful topics tied to the child's cultural experience. Bernstein (1972a) points to the middle-class values and experiences found in the content educators often, unwittingly, choose through the selection of books, texts, films, examples, and analogies to assist in providing access to universalistic orders of meaning. Bernstein's suggested methodology has been supported by findings from research studies examining the effect of situational variables on the speech function engagement of low-income children within formulated, adult-mediated interview situations (Cazden, 1970, 1972; Zigler, Abelson and Seitz, 1973; Zigler and Butterfield, 1968). These studies found that low-income children entered into a more active and explicit display of knowledge with adults when such situational variables as "topic," "task," and "interpersonal relation" were altered in ways that injected a greater degree of "personalness" into the adult-child relationship, emphasizing its person-oriented aspects and the need for explicit verbalization of individual intents and meanings.

An Examination of the Currently-Successful Preschool Intervention Programs

In apparent support of Bernstein's theory that one of the major educationally-relevant differences which low-income children bring to the classroom is a lack of practice in a style of communication in which precise referential meanings are exchanged, and that the use of this style of communication should be a major focus in preschool intervention programs, is the generally accepted finding from studies examining the effectiveness of different types of interventional curriculums that

> ...language input along some organized dimension is a key factor in successful preschool curriculums. Programs that do not make provision for systematic language interaction between teacher and child have been singularly ineffective. (Weikart, Note 1)

In a reanalysis of the data collected in three of the most carefully conducted studies examining the effectiveness of differential curriculums (Di Lorenzo, 1968; Karnes, Teska, and Hodgins, 1969; Weikert, 1966), Bissell (1973) presented evidence indicating that when the variables of overall program structure and operational quality are held constant, the distinguishing characteristic of experimental programs producing the largest gains on measurements of school readiness, in spite of superficial differences in program goals and objectives, is a high degree of structured and systematic language interaction between teacher and child.

A study conducted by Moore (1971a) provides, what appears to be, further evidence in support of the educational implications of Bernstein's theory. Moore examined the relative effectiveness of three different types of language instruction methodologies, ranging on a continuum of structure from low to high. The results of his study indicated that the language instruction methodology with the highest placement on the continuum of structure ("patterning," a method modeled after the highly-structured Bereiter-Englemann, 1966 program) was the most effective method for raising intelligence test scores and for enhancing scores on tests of complex and precise language use. Of particular relevance to Bernstein's theorizing were additional findings from Moore's study indicating that variations in the complexity and preciseness of teacher language use were not associated with student gains from pretest to posttest; instead, the results indicated that it was the quantity of complex and precise language use by the child in the treatment program that predicted the pretest-posttest gains. The indication from the results of Moore's study is that the great strength of the highly-structured experimental language programs proven successful in producing gain scores on measurements of school readiness is that they promote for all students in the program, a large quantity of precise referential speech.

Moore's (1971a) findings, at first glance, appear to support the educational implications of Bernstein's theory as it applies to designing the contents and contexts of a preschool language curriculum for low-income children, in that the most successful program in Moore's study was one in which children used the greatest amount of precise referential speech. However, a closer examination of the methodology used in Moore's highly-structured language program, in which specific verbal responses were required of the child, reveals a basic departure from Bernstein's theorizing regarding both the nature of social class difference in the use of precise referential speech and the type of educational methodology appropriate to accommodate this difference.

Moore's methodology, as well as the methodology of most currently successful language programs, is based on the assumption that low-income children do not have in their speech repertoires the particular language forms associated with precise referential speech: (a) superordinate class names, (b) uncommon adjectives, (c) logical connectives, (d) negatives, (e) reversal of conjoined words and phrases, and (f) elaborated syntax (Moore, 1971b). Bernstein (1972a) strongly disagrees with this assumption, and reviews of the research into the contextual dependency of language use (Bruner, 1971; Cazden, 1970, 1972; Cole and Bruner, 1971; Ginsburg, 1972) has revealed that many low-income children do have the language forms of precise reference in their speech repertoires and are quite capable of using language to convey precise referential meanings, but that certain social variables in formalized, adult-mediated interview settings often depress their use of language in this manner. In as much as the methodologies of most currently successful experimental language programs focus on teaching the forms of precise referential speech, rather than its functions, and do not take into consideration the contextual dependency of code use, they overlook the major educational implications of Bernstein's theorizing as it applies to the methodology of promoting the use of precise referential speech.

In accordance with Bernstein's theorizing, emerging sociolinguistic research (Cazden, 1970; 1972; Cazden, John, and Hymes, 1972) strongly suggests that it is the social functions of explicit language use that low-income children need additional practice in, rather than the learning of its forms. Bernstein's theorizing suggests that in formulating any educational program to extend the speech function repertoire and school readiness of low-income children, the primary emphasis should be placed on extending the child's repertoire of social contexts within which interpersonal communication occurs. In preschool compensatory language programs, to date, this has not been the primary emphasis. Even in the classroom curriculum designed by Bernstein's associates, D. M. and G. A. Gahagan, to extend the spoken language of young children by giving them daily extra language work, the primary emphasis does not appear to be placed on the nature of the social context for extending the social function to which language is put. According to the description offered by Gahagan and Gahagan (1970), the Gahagans' language curriculum has three major objectives: (a) to improve attention and auditory reception, (b) to extend the use of speech for carrying out certain verbal tasks, and (c) to improve structure and vocabulary. Overall, the Gahagans' program seems to focus on the forms of the elaborated code, rather than its function, even though Bernstein's significant contribution has been how the social function and the linguistic form of a code are related.

Bernstein (1972a), and others adhering to a sociolinguistic approach (Cazden, 1970; Ervin-Tripp, 1973; Kochman, 1972; Labov, 1970), argues that, not only is the verbal deficit interpretation of the school problems of low-income children theoretically unsound, but that the consequent, "compensatory" approach to preschool education may have long-range negative effects, even though the immediate test gains, and early follow-up effects, of some deficit-based language programs are impressive. Bernstein argues that, by its very nature, "compensatory" education implies something "lacking" in the families and children of low socioeconomic status and that, as a result, teachers may develop lower expectations of the children which the children may fulfill. Ervin-Tripp (1973) suggests that because most teacher-training materials of preschool, compensatory language programs focus specifically on teaching language forms, the possibility is enhanced of negative effects on teacher attitudes and educational practices:

> If teachers mistakenly conclude that dialects are related to thought processes, that non-standard speakers are like new immigrants and lack Standard English in their repertoire, or that all members of a given ethnic group are alike and have the same range of linguistic skills, then linguistically oriented materials will have reinforced social stereotypes and diverted attention from the real failure of the schools. (p. 291)

In questioning the teaching practices of the highly-structured Bereiter-Englemann program, Cazden (1971b) is more concerned with "what" is being reinforced than with "how:"

> Too often "good talking" consists of the right answer to a teacher's question spoken in only one acceptable way. The question "what is this?" has only one answer and that answer must be given in a set form, "This is a Z" not "That is. . ." or "It is. . ." or anything else. Such talking may be required if one adopts group choral response as a teaching strategy. But it hardly taps the truly human powers of any child's language ability. . .Can we find the time and the ways, personally and individually, to value the child's thoughtful and unique verbal responses to his world? (p. 128)

In like manner Kochman (Cited in Cazden, 1970) argues against such oral language programs as the one designed by Bereiter-Engleman to teach standard English to speakers of a non-standard dialect. Kochman says:

> My first quarrel with such a program is that it does not develop the ability of a person to use language, which I would further define as performance capability in a variety of social contexts on a variety of subject matter. ...Underlying this approach seems to be a misapplication of Basil Bernstein's terms which falsely equate restrictive code and elaborated code with, respectively, nonstandard

> dialect and standard dialect. It ought to be noted, as Bernstein uses the term, code is not to be equated with language, but parole, not with competence but performance. What is restrictive or elaborated is not in fact the code as sociolinguists use the term, but the message. (p. 97)

In summary, those adhering to a sociolinguistic perspective view the deficit-based methodology, which focuses its attention on the direct teaching of oral language forms, as inappropriate, theoretically unsound, and potentially detrimental to the child's educational experience.

A further problem involved in the design of current, experimentally-controlled preschool language programs is their feasibility of potentially being put into widespread practice. Their experimentally-controlled conditions, which include a low teacher-pupil ratio, special and often expensive materials, and experienced and highly-trained teachers, create a setting quite different from the standard, preschool setting. The typical preschool classroom usually does not have for every 15 children, three experienced and highly-trained teachers committed to language development. Nor can it usually afford the special materials used in experimental programs, which often include expensive audio-visual equipment.

In view of the foreseeable problems involved in the widespread implementation of current, experimentally-controlled preschool language programs, and in view of the recent criticisms from sociolinguistic investigators regarding the questionable theoretical base of these programs, many professional experts working with economically disadvantaged preschool children search for some other language teaching methodology to help prepare these children for a successful school experience. Many educational experts search for a methodology of language use instruction which would take into consideration the social basis of language use and focuses its efforts, accordingly, toward teaching children to use explicit context-independent speech in a flexible manner to fit individual experiences and needs--a methodology which would avoid the possible stereotyping and self-fulfilling failure aspects of the "deficit" based, "compensatory" programs. And finally, many educators look for an approach which could be carried out by teachers with a limited amount of special training and a limited amount of new materials, working in typical classroom settings.

The Bessell-Palomares Human Development Program

Description

The Bessell-Palomares Human Development Program (BPHDP), in its broadest sense, is "a curriculum designed to improve communications between the teacher and child (Bessell, 1970, p. 1)." More specifically, it is designed to facilitate social and emotional growth in children through the development of effective communication skills. The program consists of (a) a longitudinal curriculum design extending from preschool through junior high, (b) rating scales to subjectively assess individual student progress, and (c) an inservice training course for teachers. The curriculum, Methods in Human Development, was first published in 1967 by Drs. Harold Bessell and Uvaldo Palomares, of the Institute of Personal Effectiveness in Children in San Diego, California.

The curriculum consists of structured communication experiences designed to cultivate growth in three inter-related areas of human experience: (a) Awareness--openness to one's own and other people's feelings, thoughts, behaviors; (b) Mastery--the practice of responsible competence; and (c) Social Interaction--an understanding of how people affect each other. The major theoretical support for the BPHDP approach is derived from Karen Horney's (1950) theory of personality development, in which personal growth is related to social relationships (Bessell and Palomares, 1967). In Horney's view, the type of social relationship that allows children to acquire the essential mastery and approval that leads to healthy social and emotional growth contains within it certain favorable conditions (Levy, 1960). These conditions can be categorized according to the three thematic areas of the Bessell-Palomares Human Development Program: (a) opportunities for expression and clarification of feelings, thoughts, wishes, and interests, so that one becomes increasingly aware of one's own resources and more capable of expressing one's self and relating to others spontaneously (i.e., the Awareness theme of the BPHDP); (b) support encouragement and guidance in the exercise of emerging abilities (i.e., the Mastery theme of the BPHDP); and (c) opportunities for confronting and learning how to deal constructively with the wishes and wills of others (i.e., the Social Interaction theme of the BPHDP).

Research Findings

Dr. Bessell, co-author of the BPHDP, has predicted that, if his theory is correct, children who participate in the Human Development Program will score higher on intelligence tests due to their increased motivation (Bessell, 1968). He has further predicted that the values of the program will be measured, primarily, by the extent to which higher achievement scores occur in experimental groups using the BPHDP, as compared to control groups (Bessell, 1968). To date, however, there has been a sparsity of reported research designed to evaluate the effectiveness of the BPHDP. The seven reported experimental studies examining the effect of the BPHDP on intellectual performance and academic growth have been reviewed by Fearn and McCabe (1975). The results of these studies have produced mixed results. The two reported studies utilizing preschool and kindergarten subjects have produced data indicating that the BPHDP is a facilitator of intellectual performance at the preschool and kindergarten levels. One of these studies (McGee, cited in Fearn and McCabe, 1975), however, failed to employ a comparison group and, therefore, did not answer the question of whether the use of the BPHDP within a traditional preschool classroom is more effective than a traditional preschool curriculum alone. The other one of these studies (Brett, cited in Fearn and McCabe, 1975) with kindergarten age subjects, did answer this question. She found that her experimental groups achieved a significantly higher level of intellectual functioning and reading readiness, than did her control groups. Other than McGee's study, in which there was no control group, there has been no reported research designed to investigate the use of the BPHDP as a preschool intervention technique with economically disadvantaged children and no reported research designed to compare the relative effectiveness of the BPHDP with other preschool intervention techniques.

Use as an Intervention Technique

Although the Bessell-Palomares Human Development Program was not designed for the purpose of language use intervention, an examination of its curriculum and methodology reveals a social context, a role and speech function requirement, a mode of social control, and an implicit concept of learning which are predicted by Bernstein's theory to facilitate the type of language usage necessary for success in school. The communication tasks of the BPHDP invite children to enter into a social context characterized by person-oriented role relationships. The communication tasks require children to exchange verbally-explicit, context-independent meanings, particulary as they apply to describing, comparing, contrasting, classifying, categorizing, generalizing, and predicting individual differences and similarities, and as they apply to specifying cause-effect relationships which may exist within the matrix of feelings, thoughts, and behaviors. The type of control system found in the Human Development Program is clearly based on, what Bernstein refers to as, the "personal appeal" mode of social control. In this mode of control, the child is provided with opportunities to gain insight into his own feelings, thoughts, and behaviors through the explicit use of speech; he is then asked to use his acquired insight to predict the consequences of his behavior. The concept of learning on which the Bessell-Palomares Human Development is based is clearly the "self-regulating" type. The child is in control of, and regulates, the content conveyed in the communication tasks. In addition, leadership training is built into the program in such a way that each child, in his own time, assumes the teacher's leadership role of the group.

Those aspects of classroom situations proposed by Bernstein (1971b), and indicated by research findings, reviewed earlier (Cazden, 1970, 1972; Zigler, Abelson, and Seitz, 1973; Zigler and Butterfield, 1968), to be important facilitators in helping the low-income child extend his role and speech function repertoire to include elaborated coding, are also found in the BPHDP: (a) an inter-individual, rather than an intergroup, relationship between teacher and child, (b) a high degree of constraint for explicit verbal display, and (c) personally-relevant topics of conversation.

If the implication of Bernstein's sociolinguistic theory of social class difference in educability as it applies to designing the contents and contexts of a classroom curriculum were applied to the Bessell-Palomares Human Development Program, it could be predicted that the BPHDP, when implemented at the preschool level, may serve the purpose of enhancing the long-term school achievement, auditory-verbal learning aptitude, and intellectual performance of economically-disadvantaged children.

The advantages of using the BPHDP curriculum as an intervention technique with head start children would be several: (a) it does not require extensive teacher-training, nor does it require the purchase of extra-costly equipment or teaching materials, (b) it does not require additional teaching staff or a higher teacher-pupil ratio than is found in a typical classroom setting, (c) it is a positive, growth-oriented approach to teaching effective communication skills--it is not designed to compensate for language deficits and, in this sense, is not likely to contribute to existing misconceptions, and negative teacher attitude regarding the language abilities of lower-class children; hopefully, it provides an opportunity for changing these misconceptions and attitudes, and (d) it does not attempt to, directly, teach the language forms of elaborated coding; instead, it focuses its teaching efforts on cultivating the functions of elaborated coding. In this sense, it affords a unique opportunity to test the educational implications of Bernstein's sociolinguistic hypothesis.

Present Study

The present study investigated the question as to whether a traditionally-oriented preschool intervention curriculum modified by a special type of communications training representative of the educational implications of Bernstein's theorizing, is more effective, in terms of long-term achievement in auditory-verbal skills, intellectual functioning, and overall school achievement, than a traditional curriculum without modification by the special communications training. The most distinguishing feature of the communications training utilized in the present study was the total absence of training in the use of specific language forms or concepts and the total focus of training on extending the social functions of language use. The specific aim of the present study was to assess the effect of the Bessell-Palomares Human Development Program's communications training on the long-term school achievement, auditory-verbal learning aptitude, and intellectual performance of fifth- and sixth-grade economically-disadvantaged students who had participated, as preschool students, in a traditionally-oriented curriculum modified by the BPHDP, with the long-term school achievement, auditory-verbal learning aptitude, and intellectual performance of fifth- and sixth-grade economically-disadvantaged students who, as preschool students, had participated in a traditionally-oriented curriculum without modification by the BPHDP.

CHAPTER III

PROCEDURES

Definition of Terms

Auditory-Verbal Learning Aptitude: Student participants' total age-difference scores from the Verbal Absurdities, Auditory Attention Span, Oral Directions, and Likenesses and Differences subtests of the *Detroit Tests of Learning Aptitude* (Baker and Leland, 1959).

Age-Difference Score: A score derived by calculating the difference between a student's chronological age and his obtained age score on selected subtests of the *Detroit Tests of Learning Aptitude*.

Intellectual Performance: Student participants' IQ scores from the *Stanford-Binet Intelligence Scale, Form L-M* (Terman and Merrill, 1960).

School Achievement: Student participants' percentile scores from the *Peabody Individual Achievement Test* (Dunn and Markwardt, 1970).

Human Development Program: The activities outlined in the age 4 and age 5 curriculum guides of *Methods in Human Development* (Bessell and Palomares, 1967).

Traditional Preschool Program: The traditional, developmentally-oriented preschool curriculum (Community Action Program, Office of Economic Opportunity, 1967) generally implemented by all head start program centers in Oklahoma City, Oklahoma during the 1969-70 and 1970-71 school years.

Modified-Traditional Preschool Program: The traditional preschool program modified by implementation of the Human Development Program for approximately 15-20 minutes during the one hour time segment set aside each morning in the traditional program as a free-choice, work/play period.

Students/Student Participants: The ten economically disadvantaged students who participated in either a modified-traditional or a traditional program during the 1969-70 school year who were, at the time of this study, in the sixth grade and who served as subjects in this study, and the eight economically disadvantaged students who participated in either a modified-traditional program or a traditional program during the 1969-70 and 1970-71 school years who were, at the time of this study, in the fifth grade and who served as subjects in this study.

Pretest Scores: Scores obtained from student participants during the months of September, October, and November, 1969, prior to the commencement of the control and experimental preschool programs.

Posttest Scores: Scores obtained from the sixth grade students in May, 1970, six months after commencement of the control and experimental preschool programs, and scores obtained from the fifth grade students in January, 1971, fifteen months after commencement of the control and experimental preschool programs.

Followup Test Scores: Scores obtained from student participants after five and six years of elementary schooling, in May and June, 1976.

Economically Disadvantaged Students: Those children who participated in the present study who qualified for head start program benefits during the 1969-70 and 1970-71 school years because of economic guidelines established by the Office of Economic Opportunity (OEO) of the federal government for full-year head start programs (Community Action Program, OEO, 1967, 1969).

Statement of the Problem

The purpose of the present study was to investigate the long-range relative effectiveness of two preschool programs : (a) a traditional preschool program and (b) a modified-traditional preschool program. For purposes of the present investigation, students were divided into the following groups:

Control Group: Fifth and Sixth grade students who, as four and five year olds, were enrolled in preschool classes for economically disadvantaged students in which a traditional preschool program was implemented.

Experimental Group: Fifth and Sixth grade students who, as four and five year olds, were enrolled in a preschool class for economically disadvantaged students in which a modified-traditional preschool program was implemented.

The following questions were investigated:

1. Do students enrolled in a preschool class implementing a modified-traditional preschool program achieve greater long-range gains in intellectual performance than students enrolled in a preschool class utilizing a traditional program?

2. Do students enrolled in a preschool class implementing a modified-traditional program display, five and six years later, a greater auditory-verbal learning aptitude than students enrolled in a preschool class implementing a traditional program?

3. Do students enrolled in a preschool class implementing a modified-traditional program display, five and six years later, a higher level of school achievement than students enrolled in a preschool class implementing a traditional program?

Hypotheses

Specifically the following null hypotheses were tested:

Hypothesis 1: The pretest-followup test, Stanford-Binet Intelligence Scale, Form L-M (Terman and Merrill, 1960), IQ gain scores of students who received a modified-traditional preschool program will be less than the pretest-followup test, Stanford-Binet Intelligence Scale, Form L-M, IQ gain scores of students who received a traditional preschool program.

Corollary 1a: The followup test IQ scores of students who participated in a traditional preschool program will be less than their pretest IQ scores.

Corollary 1b: The followup test IQ scores of students who participated in a modified-traditional preschool program will be less than their pretest IQ scores.

Hypothesis 2: The posttest-followup test, Stanford-Binet Intelligence Scale, Form L-M, IQ gain scores of students who received a modified-traditional preschool program will be less than the posttest-followup test, Stanford-Binet Intelligence Scale, Form L-M, IQ gain scores of students who received a traditional preschool program.

Corollary 2a: The followup test IQ scores of students who participated in a traditional preschool program will be less than their posttest IQ scores.

Corollary 2b: The followup test IQ scores of students who participated in a modified-traditional preschool program will be less than their posttest IQ scores.

Hypothesis 3: There is no significant difference between the Auditory-Verbal Learning Aptitude age-difference scores from the Detroit Tests of Learning Aptitude (DTLA) (Baker and Leland, 1959) of students who received a traditional preschool program and students' Auditory-Verbal Learning Aptitude age-difference scores from the DTLA who received a modified-traditional preschool program.

Corollary 3a: There is no significant difference between the DTLA Verbal Absurdities age-difference scores of students who received a traditional preschool program and the DTLA Verbal Absurdities age-difference scores of students who received a modified-traditional preschool program.

Corollary 3b: There is no significant difference between the DTLA Auditory Attention Span age-difference scores of students who received a traditional preschool program and the DTLA Auditory Attention Span age-difference scores of students who received a modified-traditional preschool program.

Corollary 3c: There is no significant difference between the DTLA Oral Directions age-difference scores of students who received a traditional preschool program and the DTLA Oral Directions age-difference scores of students who received a modified-traditional preschool program.

Corollary 3d: There is no significant difference between the DTLA Likenesses and Differences age-difference scores of students who received a traditional preschool program and the DTLA Likenesses and Differences age-difference scores of students who received a modified-traditional preschool program.

Hypothesis 4: There is no significant difference between students' total achievement percentile scores taken from the Peabody Individual Achievement Test (PIAT) (Dunn and Markwardt, 1970) who received a traditional preschool program and students' total achievement percentile scores taken from the PIAT who received a modified-traditional preschool program.

Corollary 4a: There is no significant difference between the PIAT Mathematics percentile scores of the students who received a traditional preschool program and students who received a modified-traditional preschool program.

Corollary 4b: There is no significant difference between the PIAT Reading Recognition percentile scores of the students who received a traditional preschool program and students who received a modified-traditional preschool program.

Corollary 4c: There is no significant difference between the PIAT Reading Comprehension percentile scores of the students who received a traditional preschool program and students who received a modified-traditional preschool program.

Corollary 4d: There is no significant difference between the PIAT Spelling percentile scores of the students who received a traditional preschool program and students who received a modified-traditional preschool program.

Corollary 4e: There is no significant difference between the PIAT General Information percentile scores of the students who received a traditional preschool program and students who received a modified-traditional preschool program.

Subjects

The subjects in the present study consisted of 18 fifth and sixth grade students. Ten of these students were enrolled in Oklahoma City public schools; four were enrolled in public school systems adjacent to the Oklahoma City system, namely, the Putnam City school system, the Western Heights school system, and the Moore school system; and the remaining four students were enrolled in public school systems and government supported Indian schools in various other Oklahoma communities, namely, the Hinton, Oklahoma public school system, the Ardmore, Oklahoma public school system, the Concho Indian School in El Reno, Oklahoma, and the Jones Academy Indian School in Hartshorne, Oklahoma. These 18 students, during their preschool years of 1969-70, had been randomly assigned to two preschool intervention classroom programs for economically disadvantaged students (see Appendix A). At the beginning of the 1969-70 school year, a total of 61 students (31 kindergarten age and 30 pre-kindergarten age) had been randomly assigned to the two intervention programs and a preassessment of school readiness had been administered. Due to attrition factors, a total of 32 students (16 kindergarten age and 16 pre-kindergarten age) remained in the programs at the end of the 1969-70 school year, at which time the first postassessment of school readiness was administered. In September, 1970, three months following administration of the first postassessment, the 16 kindergarten age students entered first grade and six of the pre-kindergarten age students dropped out of the program. Of the 16 students who entered the first grade in September, 1970, 10 were located at the time of the present study in the Oklahoma City public school system, the Moore, Oklahoma public school system, the Putnam City school system, the Western

Heights school system, the Ardmore, Oklahoma public school system, and the Jones Academy for Indians in Hartshorne, Oklahoma. These 10 students served as subjects in the present investigation. Also serving as subjects in the present investigation were 8 of the original 16 pre-kindergarten age students, 10 of whom had remained in the preschool intervention programs for a second year before entering first grade in September, 1971. Those 8 students who entered first grade in September, 1971, and who were able to be located at the time of the present study in the Oklahoma City public school system, the Hinton, Oklahoma public school system, and the Concho Indian School in El Reno, Oklahoma served as subjects in the present investigation.

The sixth grade subjects who participated in this study had been randomly assigned to two preschool intervention programs at the beginning of their kindergarten year (6 in the traditional preschool program and 4 in the modified-traditional preschool program) and had participated in the preschool programs for a period of eight months. The fifth grade subjects who participated in this study had been randomly assigned to two preschool programs at the beginning of their pre-kindergarten year (4 in the traditional program and 4 in the modified-traditional program) and had participated in the preschool programs for a period of 19 months. Information pertaining to the sample is presented in Table 1.

Instrumentation

Three instruments were used in collecting data for the present investigation. Each of these instruments is discussed in the following sections of the study.

Table 1

Descriptive Data Relative to the Subjects
Participating in the Present Investigation

Treatment	Classification	Ethnic Background	Sex
Traditional (N = 10)	6 Sixth Graders 4 Fifth Graders	4 Negro 4 Indian 2 Caucasian	8 Males 2 Females
Modified (N = 8)	4 Sixth Graders 4 Fifth Graders	1 Negro 2 Indian 5 Caucasian	5 Males 3 Females
Total (N = 18)	10 Sixth Graders 8 Fifth Graders	5 Negro 6 Indian 7 Caucasian	13 Males 5 Females

The Stanford-Binet Intelligence Scale, Form L-M

The Stanford-Binet Intelligence Scale, Form L-M (Terman and Merrill, 1960), was utilized to assess intellectual performance of subjects involved in this study. The Stanford-Binet is composed of items which cover such areas of mental functioning as (a) Vocabulary, (b) Memory, (c) Verbal Absurdities, (d) Similarities and Differences between two objects, (e) Comprehension, (f) Arithmetic Reasoning, (g) Repeating Digits, and (h) Psychomotor Control.

The test publishers reported the test-retest reliability of the Stanford-Binet as ranging from .89 to .98. However, the Sixth Mental Measurements Yearbook (Buros, 1965) reported the reliability as ranging from .85 to .96. These reliability estimates were sufficient for the purposes of this study.

The Peabody Individual Achievement Test (PIAT)

The Peabody Individual Achievement Test (Dunn and Markwardt, 1970) was utilized to measure the academic achievement level of subjects involved. The PIAT is a wide-range screening instrument designed to survey a subject's level of educational attainment in the basic skills and knowledge of (a) Mathematics, (b) Reading Recognition, (c) Reading Comprehension, (d) Spelling, and (e) General Information.

The test publishers reported the test-retest reliability of the PIAT as ranging from .64 for the Reading Comprehension test to .89 for the Reading Recognition and Total Scores of the Test. These reliability estimates were sufficient for the present investigation. The test publishers reported the concurrent validity of the PIAT as ranging from .61 to .77. These validity estimates were accepted as sufficient for the present study.

The Detroit Tests of
Learning Aptitude

The Detroit Tests of Learning Aptitude (Baker and Leland, 1959) was used to measure the students' auditory-verbal learning aptitude. The Detroit Tests of Learning Aptitude (DTLA) is composed of nineteen subtests covering a wide range of psychological characteristics. The nineteen subtests are as follows: (a) Pictorial Absurdities, (b) Verbal Absurdities, (c) Pictorial Opposites, (d) Verbal Opposites, (e) Motor Speed and Precision, (f) Auditory Attention Span for Unrelated Words, (g) Oral Commissions, (h) Social Adjustment A, (i) Visual Attention Span for Objects (j) Orientation, (k) Free Association, (l) Designs, (m) Auditory Attention Span for Related Words, (n) Number Ability, (o) Social Adjustment B, (p) Visual Attention Span for Letters, (q) Broken or Disarranged Pictures, (r) Oral Directions, and (s) Likenesses and Differences. Four of the nineteen subtests were selected because they represented areas in which a significant difference was found between the Experimental and Control groups during their preschool intervention programs. During the preschool investigation a significant difference had been noted between the Experimental and Control groups' scores from the Listening subtest of the Metropolitan Readiness Tests (Hildreth, Griffiths, and McGauvran, 1969) and the Auditory Reception and Verbal Expression subtests of the Illinois Test of Psycholinguistic Ability, Revised Edition (Kirk, McCarthy, and Kirk, 1968). The four DTLA subtests chosen for the present study were (a) Verbal Absurdities, (b) Auditory Attention Span, (c) Oral Directions, and (d) Likenesses and Differences.

The test publishers reported the test-retest reliability of the DTLA as ranging from .94 to .96. The validity of the DTLA is reported as ranging from .84 to .87. These reliability and validity estimates were accepted as sufficient for the purposes of this study.

Experimental Procedures

The Traditional Preschool Method

The Traditional Preschool Method of preparing economically-disadvantaged students for entering the first grade in public school systems was used as the treatment for the Control group. This treatment method was the program generally implemented by the head start program centers in Oklahoma City during the 1969-70 and 1970-71 school years. The activities of this Traditional Program were developmentally-oriented and child-centered, similar to those activities conventionally used with middle-class preschool children and in head start centers across the country (Bessell, 1973). They emphasized self-selected activity and spontaneous free play. The bulk of the classroom activities were built around non-language objectives, the "free-choice," work/play period activities being nearly all intendend to develop the children's visual-motor and kinesthetic skills. For the most part, the development of language usage took place, indirectly, through spontaneous informal conversations among the children and adults. Teachers did, however, play a more formal and directive role in the development of language usage by conducting structured, large-group sessions in singing, finger plays, story telling, and language games and lessons. The cognitive content of the language activities was similar to that found in preschool programs of all types:

identification of colors, shapes, numbers, letters, materials, parts of objects, uses, and actions, and the use of prepositions, comparisons, and categories.

Although the program contained teacher-instructed and teacher-directed activities, most of the activities were initiated by the children. The children had considerable freedom to determine what they wanted to do and the manner in which the activities were conducted.

The Modified-Traditional Method

The Experimental groups' program consisted of the Traditional Program supplemented by approximately twenty minutes per day of teacher-directed communications training. The communication-circle activities were integrated into the traditional program activities during the free-choice work/play periods of the morning sessions. They were conducted with ten children at a time, so that each day there was one communication circle with the younger children (3 to 4 years of age) and another with the older children (the older 4 year olds and the 5 year olds). In the circle sessions each child was asked individually to verbally respond to teacher-presented communication topics and to comment on the responses of fellow classmates. The teacher's role was to probe each child for response elaboration and explicitness, to draw his attention to similarities and differences in responses, and to challenge each child's listening ability as fellow classmates spoke by asking him to repeat or summarize what another child had said. The communication tasks offered by the teacher were presented in a developmental sequence and built around the three thematic areas of the experimental program: (a) Awareness, (b) Mastery, and (c) Social Interaction. The communication tasks were so organized that each semester the children were exposed to one six-week unit of communication tasks designed to cultivate "awareness," one six-week unit of communication tasks designed to facilitate "mastery" and one six-week unit which focused on building positive social interaction. The Methods in Human Development curriculum guides (Bessell and Palomares, 1967) designed for 4 year olds were used with the younger group. The 1967 curriculum guides designed for 5 year olds were used with the older group. An overview of how the tasks were organized into a sequential curricular unit at the preschool and kindergarten levels is presented below.

Level A. (Preschool - 4 year olds)

Unit 1: Six weeks on Awareness: Feelings, Thoughts, and Behavior (Weeks 1-6)

- Week 1: Pleasant Feelings
- Week 2: Pleasant Thoughts
- Week 3: Positive Behavior
- Week 4: Pleasant Feelings (repeat of 1st week)
- Week 5: Pleasant Thoughts (repeat of 2nd week).
- Week 6: Positive Behavior (repeat of 3rd week)

Unit 2: Six Weeks on Mastery (Weeks 7-12)

- Week 7: Mastery in Language
- Week 8: Mastery in Quantitative Concepts
- Week 9: Mastery in Motor Skills
- Week 10: Mastery in Performance Skills
- Week 11: Mastery in Personal Hygiene (Dressing and Health)
- Week 12: Mastery in Social Comprehension (Game of "I Can Make You Feel Bad or Good")

Unit 3: Six Weeks on Social Interaction (Weeks 13-18)

- Week 13: Understanding Approval - Giving Behavior
- Week 14: Understanding Disapproval - Giving Behavior (What Did He Do That You Disliked?)

Week 15: Understanding Approval - Getting Behavior (Can You Show What You Did That Someone Liked?)
Week 16: Understanding Disapproval - Getting Behavior (Can You Show What You Did That Someone Disliked?)
Week 17: Learning to Offer Kind Behavior (What Could I Do For You?)
Week 18: Learning to Ask for Kind Behavior (What You Could Do For Me.)

Unit 4: Repeat Unit 1 (Weeks 19-24)

Unit 5: Mastery (Advanced Level) (Weeks 25-30)

Unit 6: Repeat Unit 3 (Weeks 31-36)

<u>Level B. (Kindergarten - 5 year olds)</u>

Units 1-3: Same as Level A

Unit 4: Six Weeks on Awareness (Weeks 19-24)

Week 19: Pleasant Feelings
Week 20: Unpleasant Feelings
Week 21: Pleasant Thoughts
Week 22: Unpleasant Thoughts
Week 23: Positive Behavior
Week 24: Negative Behavior

Unit 5: Mastery (Advanced) (Weeks 25-30)

Unit 6: Repeat Unit 3 (Weeks 31-36)

Data Collection Procedures

Some of the data needed to complete this present investigation already had been conducted. These data had served as the pre-assessments and post-assessments taken during the 1969-70 and 1970-71 school years.

The primary measures pertaining to this present study were IQ scores from the <u>Stanford-Binet Intelligence Scale, Form L-M</u>, auditory-verbal learning aptitude measures from the <u>Detroit Tests of Learning Aptitude (DTLA)</u>, and achievement scores from the <u>Peabody Individual Achievement Test (PIAT)</u>.

The Stanford-Binet had been administered to the student participants at the time they had entered the preschool intervention programs. The Stanford-Binet had been administered later to the same children in order to determine the amount of pretest-posttest IQ gain they had experienced. In the present study the Stanford-Binet was administered, again, to these same students, who were, at the time of the present study, in the fifth and sixth grades in order to determine (a) the amount of IQ gain they had experienced since the beginning of their preschool training programs and (b) the amount of IQ gain they had experienced since the end of their preschool training programs.

Data obtained during the preschool intervention programs had indicated that the Human Development activities may have increased the Experimental group's listening and verbal-expressive skills more than the Control group's. In order to determine the long-range effects of the program, selected auditory-verbal subtests of the DTLA were administered to the student participants. The subtests used were (a) Verbal Absurdities, (b) Likenesses and Difference, (c) Auditory Attention Span, and (d) Oral Directions. The posttest scores from these subtests were compared to determine any differences between the Experimental and Control groups' listening and verbal-expressive skills.

A third general area of investigation was the academic achievement of the students since they had entered elementary school. The PIAT was administered to all student participants as a means of determining their level of academic achievement after having completed five and six years of elementary school. The PIAT yielded subtest scores in the areas of (a) Mathematics, (b) Reading Recognition, (c) Reading Comprehension,

(d) Spelling, and (e) General Information. The posttest scores from these subtests were compared to determine any differences between the Experimental and Control groups' academic achievement levels.

Research Design

The research design used in this study could properly be classified as a time series or followup study. A paradigm of this research design is shown in Figure 1, utilizing Stanley and Campbell's (1966) nomenclature.

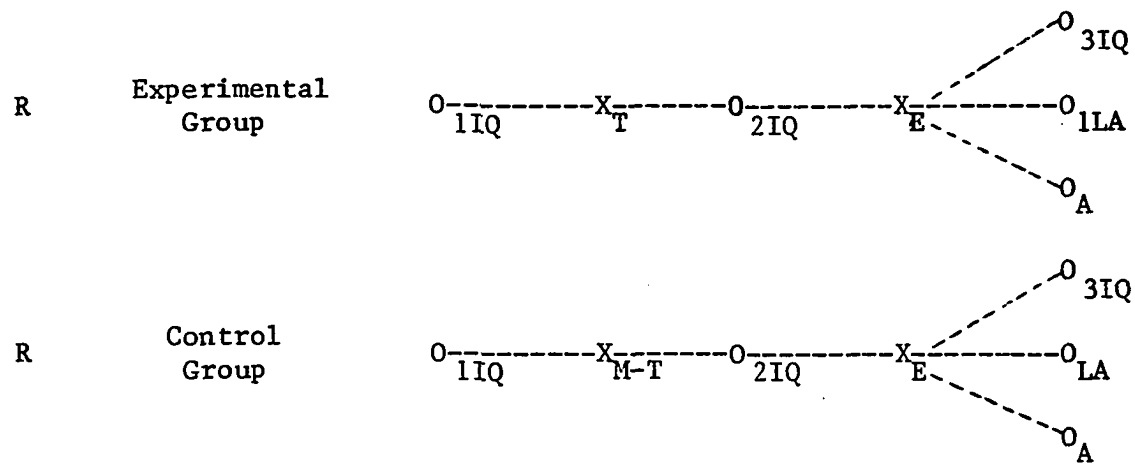
Statistical Analysis

The final stage of the methods and procedures was the statistical analysis. This involved the testing of the hypotheses and their corollaries stated in another section of this chapter. Hypothesis 1 was tested by comparing the pretest-followup test mean IQ gain score of the Control Group with the pretest-followup mean IQ gain score of the Experimental Group. A t-test (Downie and Heath, 1965) for two independent sample means was used to make this directional comparison.

Corollaries 1a and 1b were tested by comparing the mean pretest IQ scores recorded for the Experimental and Control Groups with the mean followup IQ scores recorded for these same groups. A t-test for two related sample means was used to test these directional corollaries.

Hypothesis 2 was tested by comparing the posttest-followup test mean IQ gain score of the Control Group with the posttest-followup test mean IQ gain score of the Experimental Group. A t-test for two independent sample means was used to make this directional comparison.

Corollaries 2a and 2b were tested by comparing the mean posttest IQ scores recorded for the Experimental and Control Groups with the mean



Explanation of Codes:

R	=	Random Selection and/or Assignment
O_{1IQ}	=	First IQ measure taken; Pretest administration of the Stanford-Binet IQ Test
O_{2IQ}	=	Second IQ measure taken; Posttest administration of the Stanford-Binet IQ Test
O_{3IQ}	=	Third IQ measure taken; Followup administration of the Stanford-Binet IQ Test
O_{1LA}	=	Administration of the Detroit Tests of Learning Aptitude
O_{1A}	=	Administration of the Peabody Individual Achievement Test
X_T	=	Experimental treatment; the traditional preschool training program
X_{M-T}	=	Experimental treatment; the modified-traditional preschool training program
X_E	=	Extended experimental treatment; the five and six years of elementary education

Figure 1. Paradigm of Research Design

followup IQ scores recorded for these same groups. A t-test for two related sample means was used to test these directional corollaries.

Hypothesis 3 was tested by comparing the Experimental group's DTLA Auditory-Verbal Learning Aptitude scores with the Control group's DTLA Auditory-Verbal Learning Aptitude scores. This comparison was made by using a t-test for two independent sample means. Corollaries 3a, 3b, 3c, and 3d were also tested by comparing subtest scores with a t-test for two independent sample means.

Hypothesis 4 was tested by making comparisons among the general hypothesis and five corollaries. These five corollaries are representative of the five subtests of the PIAT. A t-test was used to test five corollaries concerning the subtests of Mathematics, Reading Recognition, Reading Comprehension, Spelling, and General Information.

These constituted the primary procedures used in the data analysis. Additional statistical procedures were employed, however, when it became necessary to do so in order to fully explain the results of the study.

Significance

The development and evaluation of effective modifications in the methodology and content of traditional preschool intervention programs could have significant ramifications for the teaching of economically-disadvantaged children. The present study, if supported and extended by subsequent research, could serve as an impetus for the continued development of communications training curriculums to enhance the educability of economically-disadvantaged children. The expediency of this and related research is enhanced by the increased interest in identifying the degree to which sociolinguistic interference between the functions of language and styles of communication, in and out of school, account for the educability problems of economically-disadvantaged children and in determining the instructional methods and situations that schools must provide to alleviate this interference. In so far as Bernstein has developed the major theoretical work regarding the educationally-relevant sociolinguistic differences between social class groups, the educational implications of his theorizing as they apply to designing the contents and contexts of a preschool classroom communications curriculum should be subjected to experimental research in order to assess the relative efficiency of his proposed methodology.

Limitations

The pretest-posttest control group design, as well as its extension in the form of testing for effects extended in time, is one of the recommended designs in the methodological literature (Campbell and Stanley, 1966; Kerlinger, 1964), the strength of which lies in its controls of factors jeopardizing internal validity. In regard to testing for effects extended in time, Campbell and Stanley (1966) write:

> In the area of persuasion, an area somewhat akin to that of educating and teaching, Hovland and his associates have repeatedly found that long-term effects are not only quantitatively different, but also qualitatively different. Long-range effects are greater than immediate effects for general attitudes, although weaker for specific attitudes (Hovland, Lusdaine, and Sheffield, 1949)...such findings warn us against pinning all of our experimental evaluation of teaching methods on immediate posttests or measures at any single point in time. (p. 31)

Before-after designs, however, are said to have two troublesome aspects which may decrease the external validity or representativeness of the experiment. One is the reactive or interaction effect of the pretest

(Campbell and Stanley, 1966). The pretest may have a sensitizing effect on subjects (Kerlinger, 1964); there may be an interaction between testing and the treatment (Campbell and Stanley, 1966). With regard to the relationship between testing and external validity, Campbell and Stanley, (1966) write:

> The effect of the pretest upon (the experimental treatment) as it restricts external validity is of course a function of the extent to which such repeated measurements are characteristic of the universe to which one wants to generalize...in research on teaching one is interested in generalizing to a setting in which testing is a regular phenomenon. Especially if the experimenter can use regular classroom examinations as (testing measures), but probably, also, if the experimental (testing measures), are similar to those usually used, no undesirable interaction of testing and (the experimental treatment) would be present. (p. 18)

The issue of the sensitizing of the pretest on the experimental group may not be a critical issue in the present study because in preschool education today testing is somewhat of, if not rapidly becoming, a regular phenomenon, and the types of items found in most preschool tests are not only similar to each other, but also similar to the types of activities found in typical preschool curriculums.

Another factor which may decrease the external validity or representativeness in a pre-posttest control group design is the reactive effects of experimental arrangements, "which would preclude generalization about the effect of the experimental variable upon persons being exposed to it in nonexperimental settings (Campbell and Stanley, 1966, p. 6)." With regard to the relationship between reactive arrangements in experimental settings and external validity, Van Dalen (1966) writes:

> The less conspicuous the experimental procedures, the better. If an E can bury T_1 and T_2 in the routine school testing pro-

> gram, can assign S_s at random to groups without making them aware of it, and can have the regular teacher present X as a normal part of the instructional program, he can make generalizations concerning the findings of his study with greater confidence. (p. 266)

In order to follow Van Dalen's recommendations cited above and to minimize the conspicuous nature of the experimental procedures, and hence the effect of reactive experimental arrangements, the random assignment of subjects to control and experimental classrooms was presented as part of the regular school routine for arranging classes for a new fall semester. The pre- and posttesting sessions, as well as the experimental treatment itself, was integrated into the regular classroom routine, as variants of usual classroom events. The regular teacher presented the largest part of the experimental treatment, presenting it as a normal part of the daily program; there was, however, an initial short-term period when the treatment was presented by an outside teacher/experimenter. As an additional precautionary measure, the teachers, even though they were participants in the experiment, were not informed as to the specific design of the experiment in terms of the dependent variables being measured.

A second limitation of the present study involved the influence of the teachers on the treatments, and hence the possibility of a lack of control for internal validity in the form of teacher differences becoming a form of intrasession history confounded with the particular treatment (Campbell and Stanley, 1966). Two teachers and two teacher-assistants utilized the traditional curriculum in two separate classrooms, while two other teachers and their two assistants utilized the modified-traditional curriculum in two other classrooms. Various measures were taken to minimize the contaminating influence of the teachers on the dependent variable (Appendix A).

CHAPTER IV

RESULTS

Eighteen (n=18) fifth- and sixth-grade students enrolled in the Oklahoma City public school system, in public school systems adjacent to the Oklahoma City system, namely, the Putnam City school system, the Western Heights school system, and the Moore school system, in public school systems and government supported Indian schools in various other Oklahoma communities, namely, the Hinton, Oklahoma public school system, the Ardmore, Oklahoma public school system, the Concho Indian School in El Reno, Oklahoma, and the Jones Academy Indian School in Hartshorne, Oklahoma, served as subjects to determine the long-range effects of preschool classroom intervention programs they had received as pre-kindergarten and kindergarten students. One group, the Experimental Group (n=8), had received a modified-traditional preschool intervention program in which they were part of the Bessell-Palomares Human Development Program (BPHDP). A second group, the Control Group (n=10), had received a traditional preschool intervention program. An initial study of the effect of the BPHDP on IQ, language use, and school readiness scores indicated that the Experimental Group had made significantly greater gains in IQ and in some language and school readiness areas (Appendix A). The present study was an attempt to determine the effects of the BPHDP after five and six years of public schooling.

Three testing instruments were used to collect data for the present study: (a) the Stanford-Binet Intelligence Scale, Form L-M, (b) the Detroit Tests of Learning Aptitude (DTLA), and (c) the Peabody Individual Achievement Test (PIAT). Data from these three instruments were used to test four hypotheses and thirteen corollaries. This chapter contains the results of the data analysis procedures.

Preliminary Analysis

Prior to testing the hypotheses, it was necessary to compute the descriptive statistics for the Experimental and Control Groups' data and to determine the homogeneity of the variances of the scores being contrasted in each statistical comparison (Bruning & Kintz, 1968). These descriptive statistics are presented in Table 2. A t-test (Downie & Heath, 1965) was employed to test the assumption of homogeneity of related variances in those instances where the variances being contrasted were computed from two measures of the same sample: Corollaries, 1a, 1b, 2a, and 2b. The F_{max} test (Bruning & Kintz, 1968) was employed to test the assumption of homogeneity of independent variances in those instances where the variances contrasted were computed from two different samples: Hypothesis 1 and Hypothesis 2. In each instance in which the assumption of homogeneity of variance was tested, the calculated value was less than the tabled value; consequently, the assumption of homogeneity of variance was not rejected.

Table 2

Summary of Descriptive Statistics Computed for Experimental and Control Groups to Determine the Homogeneity of the Variances of the Scores Being Contrasted in Each Statistical Comparison

Statistical Comparison	Lowest Variance	Highest Variance	Computed Value	Significance Level
Hypothesis 1	Experimental Group's Gain Scores, Pretest and Followup (S^2 = 89.87)	Control Group's Gain Scores, Pretest and Followup (S^2 = 159.26)	F=1.772	$p > .05$
Corollary 1a	Control Group's Pretest IQ Scores (S^2 = 95.20)	Control Group's Followup Scores (S^2 = 113.64)	t=1.092	$p > .05$
Corollary 1b	Experimental Group's Pretest IQ Scores (S^2 = 109.41)	Experimental Group's Followup Scores (S^2 = 160.02)	t=1.209	$p > .05$
Hypothesis 2	Experimental Group's Gain Scores, Posttest and Followup (S^2 = 45.02)	Control Group's Gain Scores, Posttest and Followup (S^2 = 283.25)	F=6.292	$p > .05$
Corollary 2a	Control Group's Posttest Scores (S^2 = 93.99)	Control Group's Followup Scores (S^2 = 113.64)	t=1.100	$p > .05$
Corollary 2b	Experimental Group's Posttest Scores (S^2 = 64.16)	Experimental Group's Followup Scores (S^2 = 160.02)	t=1.579	$p > .05$
Hypothesis 3	Control Group's Total A-V Score (S^2 = 260.16)	Experimental Group's Total A-V Score (S^2 = 304.86)	F=1.172	$p > .05$
Corollary 3a	Control Group's Verbal Absurdities Scores (S^2 = 818.05)	Experimental Group's Verbal Absurdities Scores (S^2 = 193.75)	F=4.222	$p > .05$
Corollary 3b	Experimental Group's Auditory Attention Span Scores (S^2 = 689.488)	Control Group's Auditory Attention Span Scores (S^2 = 889.69)	F=1.290	$p > .05$

Statistical Comparison	Lowest Variance	Highest Variance	Computed Value	Significance Level
Corollary 3c	Control Group's Oral Directions Scores (S^2 = 473.80)	Experimental Group's Oral Directions Scores (S^2 = 929.25)	F=1.961	$p > .05$
Corollary 3d	Experimental Group's Likenesses and Differences Scores (S^2 = 222.19	Control Group's Likenesses and Differences Scores (S^2 = 553.21)	F=2.490	$p > .05$
<u>Hypothesis 4</u>	Control Group's Total Achievement Scores (S^2 = 369.79)	Experimental Group's Total Achievement Scores (S^2 = 450.29)	F=1.218	$p > .05$
Corollary 4a	Control Group's Mathematics Scores (S^2 = 689.59	Experimental Group's Mathematics Scores (S^2 = 881.50)	F=1.278	$p > .05$
Corollary 4b	Experimental Group's Reading Recognition Scores (S^2 = 697.49)	Control Group's Reading Recognition Scores (S^2 = 791.86)	F=1.135	$p > .05$
Corollary 4c	Experimental Group's Reading Comprehension Scores (S^2 = 590.98)	Control Group's Reading Comprehension Scores (S^2 = 610.58)	F=1.033	$p > .05$
Corollary 4d	Experimental Group's Spelling Scores (S^2 = 369.41)	Control Group's Spelling Scores (S^2 = 524.87)	F=1.421	$p > .05$
Corollary 4e	Control Group's General Information Scores (S^2 = 411.28)	Experimental Group's General Information Scores (S^2 = 578.88)	F=1.406	$p > .05$

Evaluation of the Null Hypotheses

Hypothesis 1

> The pretest-followup test Stanford-Binet Intelligence Scale, Form L-M, (Terman and Merrill, 1960) IQ gain scores of students who received a modified-traditional preschool program will be less than the pretest-followup test Stanford-Binet Intelligence Scale, Form L-M IQ gain scores of students who received a traditional preschool program.

Null hypothesis 1 was tested by comparing the Experimental Group's pretest-followup test IQ gain score with the Control Group's pretest-followup test IQ gain score. A t-test for two independent sample means was used to make the statistical comparison. Mean pretest, followup test, and gain IQ scores appear in Table 3. Pretest, followup test, and gain IQ scores for each subject in the Control and Experimental Groups appear in Appendix B, Table B-1.

The t-test for independent observations was employed as a statistical test of the significance of the difference between the mean pretest IQ scores for the Control and Experimental Groups. The computed t=0.132 indicates that the difference between the Experimental and Control Groups' pretest IQ scores was not statistically significant.

The mean followup test IQ scores for the Control and Experimental Groups were evaluated with the t-test for independent observations. The calculated t=0.068 indicates that the difference between the Experimental and Control Groups' mean followup IQ test scores was not significantly different. The subjects who participated in the modified-traditional preschool program did not score significantly better on the followup IQ test than did the subjects who participated in the traditional preschool program.

Table 3

Mean Pretest, Followup Test, and Gain Stanford-Binet IQ Scores for Experimental and Control Groups

Student Group	Pretest	Followup Test	Gain
Experimental Group (n=8)	85.88	97.75	11.88
Control Group (n=10)	91.90	94.40	2.50
Difference	6.02	3.35	9.38

The difference between the control group's mean IQ gain score and the experimental group's mean IQ gain score was analyzed with a t-test for independent observations. Results of the statistical calculations are presented in Table 4 along with the means and standard deviations used in the calculations. The results presented in Table 4 show that there was a significant difference between the two mean values ($t=1.792$, $df=16$; $p < .05$). Examination of the mean values shows that the Experimental Group's mean IQ gain score ($\bar{X} = 11.88$) was significantly higher than the Control Group's mean IQ gain score ($\bar{X} = 2.50$).

A direct examination of the followup test mean IQ scores, unadjusted for pretest differences, indicates that subjects who participated in a modified-traditional preschool training program did not score significantly better on the followup IQ test than did subjects who participated in a traditional preschool training program. However, when followup test mean IQ scores were adjusted for pretest differences, the difference between the two groups was significant ($p < .05$); the experimental group's pretest-followup test mean IQ gain was significantly greater than the control group's gain; therefore, Null Hypothesis 1 was rejected.

Table 4

Comparison of the Control Group's Pretest and Followup Mean Stanford-Binet IQ Gain Score with the Experimental Group's Pretest and Followup Mean Stanford-Binet IQ Gain Score

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	2.50	12.72		
			1.792	$p < .05$
Experimental	11.88	9.48		

Corollary 1a. The followup test IQ scores of students who participated in a traditional preschool program will be less than their pretest IQ scores.

Corollary 1a was tested by comparing the difference between the Control Group's mean pretest IQ score and the Control Group's mean follow-up test IQ score. A t-test for two related sample means was used to make the statistical comparision. The results are presented in Table 5 along with the means and standard deviations used in making the comparison.

The results presented in Table 5 were not significant ($t=0.547$, $df=9$; $p > .05$). The Control Group's mean IQ score at the followup testing ($\bar{X}$ = 94.40) was not significantly higher than its mean IQ score at the pretesting ($\bar{X}$ = 91.90); therefore, Corollary 1a was not rejected.

Table 5

Comparison of Pretest and Followup Test Mean
Stanford-Binet IQ Scores for the Control Group

Control Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
IQ Scores at Pretesting	91.90	9.757		
			0.547	$p > .05$
IQ Scores at Followup Testing	94.90	10.66		

> Corollary 1b. The followup test IQ scores of students who participated in a modified-traditional preschool program will be less than their pretest IQ scores.

Corollary 1b was tested by comparing the difference between the Experimental Group's mean pretest IQ score and the Experimental Group's mean followup test IQ score. A t-test for two related sample means was used to make the statistical comparison. The results are presented in Table 6 along with the means and standard deviations used in making the comparison.

The results presented in Table 6 show that there was a significant difference between the two mean values ($t=2.044$; $df=7$; $p < .05$). Examination of the data shows that the Experimental Group's mean IQ score at the followup testing was significantly higher ($\bar{X} = 97.75$) than their mean IQ score at the pretesting ($\bar{X} = 85.88$); therefore, Corollary 1b was rejected.

Table 6

Comparison of Pretest and Followup Test Mean
Stanford-Binet IQ Scores for the Experimental Group

Experimental Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
IQ Scores at Pretesting	85.88	10.46		
			2.044	$p < .05$
IQ Scores at Followup Testing	97.75	12.65		

Hypothesis 2

> The posttest-followup test Stanford-Binet Intelligence Scale Form L-M, IQ gain scores of students who received a modified-traditional preschool program will be less than the posttest-followup test Stanford-Binet Intelligence Scale, Form L-M, IQ gain scores of students who received a traditional preschool program.

Null hypothesis 2 was tested by comparing the Experimental Group's posttest-followup test IQ gain score with the Control Group's posttest-followup test IQ gain score. A t-test for two independent sample means was used to make the statistical comparison. Mean posttest, followup test, and gain IQ scores appear in Table 7. Posttest, followup test, and gain IQ scores for each subject in the Control and Experimental Groups appear in Appendix B, Table B-1.

The t-test for independent observations was employed as a statistical test of the significance of the difference between the mean posttest IQ scores for the Control and Experimental Groups. The computed t=0.038 indicates that the difference between the Experimental and Control Groups posttest IQ scores was not statistically significant.

The mean followup test IQ scores for the Control and Experimental Groups were evaluated with the t-test for independent observations. The calculated t=0.068 indicates that the difference between the Experimental and Control Groups' mean followup IQ test scores was not significantly different. The subjects who participated in the modified-traditional preschool program did not score significantly better on the followup IQ test than did the subjects who participated in the traditional preschool program.

Table 7

Mean Posttest, Followup Test, and Gain Stanford-Binet IQ Scores for Experimental and Control Groups

Student Group	Posttest	Followup Test	Gain
Experimental Group (n=8)	99.25	97.75	-1.50
Control Group (n=10)	101.20	94.40	-6.80
Difference	1.95	3.35	-5.30

The difference between the Control Group's mean IQ gain score and the Experimental Group's mean IQ gain score was analyzed with a t-test for independent observations. Results of the statistical calculations are presented in Table 8 along with the means and standard deviations used in the calculations. The results presented in Table 8 show that there was not a significant difference between the two mean values ($t=0.909$, $df=16$; $p > .05$). Examination of the mean values shows that the Experimental Group's mean gain score ($\bar{X} = -6.80$) was not significantly higher than the Control Group's mean gain score ($\bar{X} = -1.50$); therefore, Null Hypothesis 2 was not rejected.

Table 8

Comparison of the Control Group's Posttest and Followup Test Mean Stanford-Binet IQ Gain Score with the Experimental Group's Posttest and Followup Test Mean Stanford-Binet IQ Gain Score

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	-6.80	16.83		
			0.909	$p > .05$
Experimental	-1.50	6.71		

Corollary 2a. The followup test IQ scores of students who participated in a traditional preschool program will be less than their posttest IQ scores.

Corollary 2a was tested by comparing the difference between the Control Group's mean posttest IQ score and the Control Group's mean followup test IQ score. A t-test for two related sample means was used to make the statistical comparison. The results are presented in Table 9 along with the means and standard deviations used in making the comparison.

The results presented in Table 9 were not significant ($t=1.493$; $df=9$; $p > .05$). The Control Group's mean IQ score at the followup testing

($\bar{X}$ = 94.40) was not significantly higher than its mean IQ score at the posttest ($\bar{X}$ = 101.20); therefore, Corollary 2a was not rejected.

Table 9

Comparison of Posttest and Followup Test Mean <u>Stanford-Binet</u> IQ Scores for the Control Group

Control Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
IQ Scores at Posttesting	101.20	9.69		
			1.493	$p > .05$
IQ Scores at Followup Testing	94.40	10.66		

<u>Corollary 2b</u>. The followup test IQ scores of students who participated in a modified-traditional preschool program will be less than their posttest IQ scores.

Corollary 2b was tested by comparing the difference between the Experimental Group's mean posttest IQ score and the Experimental Group's mean followup test IQ score. A t-test for two related sample means was used to make the statistical comparison. The results are presented in Table 10 along with the means and standard deviations used in making the comparison.

The results presented in Table 10 show that there was not a significant difference between the two mean values ($t=0.283$; $df=7$; $p > .05$). Examination of the data shows that the Experimental Group's mean IQ score at the followup testing was not significantly higher ($\bar{X}$ = 97.75) than its mean IQ score at the posttesting ($\bar{X}$ = 99.25); therefore, Corollary 2b was not rejected.

Table 10

Comparison of Posttest and Followup Test Mean
Stanford-Binet IQ Scores for the Experimental Group

Experimental Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
IQ Scores at Posttesting	99.25	8.01	0.283	$p > .05$
IQ Scores at Followup Testing	97.75	12.65		

Hypothesis 3

> There is no significant difference between the Auditory-Verbal Learning Aptitude age-difference scores from the Detroit Tests of Learning Aptitude (DTLA) of students who received a traditional preschool training program and students' Auditory Verbal Learning Aptitude age-difference scores from the Detroit Tests of Learning Aptitude who received a modified-traditional preschool training program.

Null Hypothesis 3 was tested by comparing the Experimental Group's mean DTLA Auditory-Verbal Learning Aptitude age-difference score with the Control Group's mean DTLA Auditory-Verbal Learning Aptitude age-difference score. A t-test for two independent sample means was used to make the comparison. The results of the statistical calculations are presented in Table 11 along with the means and standard deviations used to make the statistical calculations.

The results presented in Table 11 show that there was not a significant difference between the two groups' mean DTLA Auditory-Verbal Learning Aptitude age-difference scores ($t=1.739$; $df=16$; $p > .05$). Even though the Experimental Group's mean value ($\bar{X} = 5.12$) was much higher than the Control Group's mean value ($\bar{X}$ = -8.80), the difference between the two means was not significant; therefore, Null Hypothesis 3 was not rejected.

Table 11

Comparison of the Control Group's Mean Auditory-Verbal Age-difference Score Taken from the <u>Detroit Tests of Learning Aptitude</u> with the Experimental Group's Mean Auditory-Verbal Age-difference Score Taken from the <u>Detroit Tests of Learning Aptitude</u>

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	-8.80	16.13		
			1.739	$p > .05$
Experimental	5.12	17.46		

> Corollary 3a. There is no significant difference between the <u>DTLA</u> Verbal Absurdities age-difference scores of students who received a traditional preschool training program and the <u>DTLA</u> Verbal Absurdities age-difference scores of students who received a modified-traditional preschool training program.

Corollary 3a was tested by comparing the Experimental Group's mean <u>DTLA</u> Verbal Absurdities age-difference score with the Control Group's mean <u>DTLA</u> Verbal Absurdities age-difference score. A t-test for two independent sample means was used to make the comparison. The results of the statistical calculations are presented in Table 12 along with the means and standard deviations of the Experimental and Control Group's data.

The results presented in Table 12 show that there was a significant difference between the Experimental and Control Groups' mean <u>DTLA</u> Verbal Absurdities age-difference scores ($t=1.846$; $df=16$; $p< .05$). An examination of the data presented in Table 12 shows that the Experimental Group's mean score ($\bar{X}$ = 16.50) was significantly higher than the Control Group's mean score ($\bar{X}$ = -2.50); therefore, Corollary 3a was rejected.

Table 12

Comparison of the Control Group's Mean Verbal Absurdities Age-difference Score Taken from the Detroit Tests of Learning Aptitude with the Experimental Group's Mean Verbal Absurdities Age-difference Score Taken from the Detroit Tests of Learning Aptitude

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	-2.50	28.60		
			1.846	$p < .05$
Experimental	16.50	13.92		

Corollary 3b. There is no significant difference between the DTLA Auditory Attention Span age-difference scores of students who received a traditional preschool training program and the DTLA Auditory Attention Span age-difference scores of students who received a modified-traditional preschool training program.

Corollary 3b was tested by comparing the Experimental Group's mean DTLA Auditory Attention Span age-difference score with the Control Group's mean DTLA Auditory Attention Span age-difference score. A t-test for two independent sample means was used to make the comparison. The results of the statistical calculations are presented in Table 13 along with the means and standard deviations of the Experimental and Control Groups' data.

The results presented in Table 13 show that there was not a significant difference between the two groups' mean DTLA Auditory Attention

Span age-difference scores ($t=0.002$; $df=16$; $p > .05$). An examination of the data presented in Table 13 shows that the Experimental Group's mean score ($\bar{X} = -37.13$) was almost identical to the Control Group's mean score ($\bar{X} = -37.10$); therefore, Corollary 3b was not rejected.

Table 13

Comparison of the Control Group's Mean Auditory Attention Span Age-difference Score Taken from the Detroit Tests of Learning Aptitude with the Experimental Group's Mean Auditory Attention Span Age-difference Score Taken from the Detroit Tests of Learning Aptitude

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	-37.10	29.83		
			0.002	p > .05
Experimental	-37.13	26.26		

Corollary 3c. There is no significant difference between the DTLA Oral Directions age-difference scores of students who received a traditional preschool training program and the DTLA Oral Directions age-difference scores of students who received a modified-traditional preschool training program.

Corollary 3c was tested by comparing the Experimental Group's mean DTLA Oral Directions age-difference score with the Control Group's mean DTLA Oral Directions age-difference score. A t-test for two independent sample means was used to make the comparison. The results of the statistical calculations are presented in Table 14 along with the means and standard deviations of the Experimental and Control Groups' data.

The results presented in Table 14 show that there was not a significant difference between the two groups' mean DTLA Oral Directions age-difference scores (t=0.782; df=16; p >.05). An examination of the data presented in Table 14 shows that the Experimental Group's mean score ($\bar{X}$ = -15.00) was not significantly greater than the Control Group's mean score ($\bar{X}$ = -25.00); therefore, Corollary 3c was not rejected.

Table 14

Comparison of the Control Group's Mean Oral Directions Age-difference Score Taken from the Detroit Tests of Learning Aptitude with the Experimental Group's Mean Oral Directions Age-difference Score Taken from the Detroit Tests of Learning Aptitude

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	-25.00	21.77		
			0.782	p >.05
Experimental	-15.00	30.48		

Corollary 3d. There is no significant difference between the DTLA Likenesses and Differences age-difference scores of students who received a traditional preschool training program and the DTLA Likenesses and Differences age-difference scores of students who received a modified-traditional preschool training program.

Corollary 3d was tested by comparing the Experimental Group's mean DTLA Likenesses and Differences age-difference score with the Control Group's mean DTLA Likenesses and Differences age-difference score. A t-test for two independent sample means was used to make the comparison. The results of the statistical calculations are presented in Table 15 along with the means and standard deviations of the Experimental and Control Groups' data.

The results presented in Table 15 show that there was not a significant difference between the two groups' mean DTLA Likenesses and Differences age-difference scores ($t=1.640$; $df=16$; $p > .05$). An examination of the data presented in Table 15 shows that the Experimental Group's mean score ($\bar{X} = 47.25$) was not significantly higher than the Control Group's mean score ($\bar{X} = 32.30$); therefore, Corollary 3d was not rejected.

Table 15

Comparison of the Control Group's Mean Likenesses and Differences Age-difference Score Taken from the Detroit Tests of Learning Aptitude with the Experimental Group's Mean Likenesses and Differences Age-difference Score Taken from the Detroit Tests of Learning Aptitude

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	32.30	23.52		
			1.640	$p > .05$
Experimental	47.25	14.91		

Hypothesis 4

> There is no significant difference between students' total achievement percentile scores taken from the Peabody Individual Achievement Test (PIAT) who received a traditional preschool training program and students' total achievement percentile scores taken from the Peabody Individual Achievement Test who received a modified-traditional preschool training program.

Null Hypothesis 4 was tested by comparing the Experimental Group's mean total achievement percentile score from the PIAT with the Control Group's mean total achievement percentile score from the PIAT. This comparison was made by using a t-test for two independent sample means. The means and standard deviations of the Experimental and Control Groups' scores are presented in Table 16 along with the results of the statistical calculations.

The results presented in Table 16 indicate that there was not a significant difference between the two groups' mean PIAT total achievement percentile scores ($t=0.024$; $df=16$; $p > .05$). The Experimental Group's mean score ($\bar{X} = 28.13$) was slightly higher than the Control Group's mean score ($\bar{X} = 27.90$), but the difference between the two mean values was not significant; therefore, Null Hypothesis 4 was not rejected.

Table 16

Comparison of the Control Group's Mean Total Achievement Percentile Score Taken from the Peabody Individual Achievement Test with the Experimental Group's Mean Total Achievement Percentile Score Taken from the Peabody Individual Achievement Test

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	27.90	19.23		
			0.024	$p > .05$
Experimental	28.13	21.22		

Corollary 4a. There is no significant difference between the PIAT Mathematics achievement percentile scores of students who received a traditional preschool training program and the PIAT Mathematics achievement percentile scores of students who received a modified-traditional preschool program.

Corollary 4a was tested by comparing the Experimental Group's mean PIAT Mathematics percentile score with the Control Group's mean percentile score. A t-test for two independent sample means was used to make the statistical comparison. The results are presented in Table 17 along with the means and standard deviations of the Experimental and Control Groups' scores.

The results presented in Table 17 show that there was not a significant difference between the two groups' mean PIAT Mathematics achievement percentile scores ($t=0.717$; $df=16$; $p > .05$). Even though the Experimental Group's mean percentile was much higher ($\bar{X} = 43.50$) than the Control Group's mean percentile ($\bar{X} = 33.90$), the difference was not statistically significant; therefore, Corollary 4a was not rejected.

Table 17

Comparison of the Control Group's Mean PIAT Mathematics Percentile Score and the Experimental Group's Mean PIAT Mathematics Percentile Score

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	33.90	26.26		
			0.717	p > .05
Experimental	43.50	29.69		

Corollary 4b. There is no significant difference between the PIAT Reading Recognition achievement percentile scores of students who received a traditional preschool training program and the PIAT Reading Recognition achievement percentile scores of students who received a modified-traditional preschool program.

Corollary 4b was tested by comparing the Experimental Group's mean PIAT Reading Recognition percentile score with the Control Group's mean PIAT percentile score. A t-test for two independent sample means was used to make the statistical comparison. The results are presented in Table 18 along with the means and standard deviations of the Control and Experimental Groups' scores.

The results presented in Table 18 show that there was not a significant difference between the two groups' mean PIAT Reading Recognition achievement percentile scores ($t=0.196$; $df=16$; $p > .05$). Even though the Experimental Group's mean percentile was higher ($\bar{X} = 35.63$) than the Control Group's mean percentile ($\bar{X} = 33.10$), the difference was not statistically significant; therefore, Corollary 4b was not rejected.

Table 18

Comparison of the Control Group's Mean PIAT Reading Recognition Percentile Score and the Experimental Group's Mean PIAT Reading Recognition Percentile Score

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	33.10	28.14		
			0.196	$p > .05$
Experimental	35.63	26.41		

Corollary 4c. There is no significant difference between the PIAT Reading Comprehension percentile achievement scores of students who received a traditional preschool training program and the PIAT Reading Comprehension achievement percentile scores of students who received a modified-traditional preschool program.

Corollary 4c was tested by comparing the Experimental Group's mean PIAT Reading Comprehension percentile score with the Control Group's mean PIAT Reading Comprehension percentile score. A t-test for two independent sample means was used to make the statistical comparison. The results are presented in Table 19 along with the means and standard deviations of the Experimental and Control Groups' scores.

The results presented in Table 19 show that there was not a significant difference between the two groups' mean PIAT Reading Comprehension achievement percentile scores ($t=0.202$; $df=16$; $p > .05$). Even though the Control Group's mean percentile was higher ($\bar{X} = 32.60$) than the Experimental Group's mean percentile ($\bar{X} = 30.25$), the difference was not statistically significant; therefore, Corollary 4c was not rejected.

Table 19

Comparison of the Control Group's Mean PIAT Reading Comprehension Percentile Score and the Experimental Group's Mean PIAT Reading Comprehension Percentile Score

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	32.60	24.71		
			0.202	$p > .05$
Experimental	30.25	24.31		

Corollary 4d. There is no significant difference between the PIAT Spelling achievement percentile scores of students who received a traditional preschool training program and the PIAT Spelling achievement percentile scores of students who received a modified-traditional preschool program.

Corollary 4d was tested by comparing the Experimental Group's mean PIAT Spelling percentile score with the Control Group's mean PIAT Spelling percentile score. A t-test for two independent sample means was used to make the statistical comparison. The results are presented in Table 20 along with the means and standard deviations of the Experimental and Control Groups' scores.

The results presented in Table 20 show that there was not a significant difference between the two groups' mean PIAT Spelling percentile scores ($t=1.309$; $df=16$; $p > .05$). Even though the Experimental Group's mean percentile was lower ($\bar{X} = 21.00$) than the Control Group's mean percentile ($\bar{X} = 34.00$), the difference was not statistically significant; therefore, Corollary 4d was not rejected.

Table 20

Comparison of the Control Group's Mean PIAT Spelling Percentile Score and the Experimental Group's Mean PIAT Spelling Percentile Score

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	34.00	22.91		
			1.309	p > .05
Experimental	21.00	19.22		

Corollary 4e. There is no significant difference between the PIAT General Information achievement percentile scores of students who received a traditional preschool training program and the PIAT General Information achievement percentile scores of students who received a modified-traditional preschool program.

Corollary 4e was tested by comparing the Experimental Group's mean PIAT General Information percentile score with the Control Group's mean PIAT General Information percentile score. A t-test for two independent sample means was used to make the statistical comparison. The results are presented in Table 21 along with the means and standard deviations of the Experimental and Control Group's scores.

The results presented in Table 21 show that there was not a significant difference between the two groups' mean PIAT General Information achievement percentile scores ($t=0.049$; $df=16$; $p > .05$). Even though the Experimental Group's mean percentile was lower ($\bar{X} = 35.88$) than the Control Group's mean percentile ($\bar{X} = 36.40$), the difference was not statistically significant; therefore, Corollary 4e was not rejected.

Table 21

Comparison of the Control Group's Mean PIAT General Information Score and the Experimental Group's Mean PIAT General Information Score

Student Group	Mean	Standard Deviation	Calculated t-Value	Significance Level
Control	36.40	20.28		
			0.049	$p > .05$
Experimental	35.88	24.06		

Summary

Intellectual Performance

The Experimental and Control groups did not differ significantly on mean IQ pretest scores. The difference between the two groups on mean IQ followup scores, unadjusted for mean IQ pretest score differences, was also not significant. When the followup test scores were adjusted for pretest differences by calculation of pretest-followup test gain scores, the difference between the two groups' mean IQ scores was significant at the .05 level of significance. The Experimental Group's mean IQ gain score was significantly higher than the Control Group's mean IQ gain score; therefore, Null Hypothesis 1 was rejected.

The difference between the Control Group's mean IQ score at the pretesting and its mean IQ score at the followup testing was not significant. The Control Group's mean IQ score at the followup testing was not significantly higher than its mean IQ score at the pretesting; therefore, Corollary 1a was not rejected.

The difference between the Experimental Group's mean IQ score at the pretesting and its mean IQ score at the followup testing was significant at the .05 level of significance. The Experimental Group's mean IQ score at the followup testing was significantly higher than its mean IQ score at the pretesting; therefore, Corollary 1b was rejected.

The Experimental and Control groups did not differ significantly on mean posttest IQ scores, on mean followup IQ scores, or on posttest-followup test IQ gain scores. The Experimental Group's posttest-followup test mean IQ gain score was not significantly higher than the Control Group's posttest-followup test mean IQ gain score; therefore, Null Hypothesis 2 was not rejected.

The difference between the Control Group's mean IQ score at the posttesting and its mean IQ score at the follow-up testing was not significant. The Control Group's mean IQ score at the follow-up testing was not significantly higher than its mean IQ score at the posttesting; therefore, Corollary 2a was not rejected.

The difference between the Experimental Group's mean IQ score at the posttesting and its mean IQ score at the follow-up testing was not significant. The Experimental Group's mean IQ score at the follow-up testing was not significantly higher than its mean IQ score at the posttesting; therefore, Corollary 2b was not rejected.

Auditory-Verbal Learning Aptitude

The Experimental and Control Groups did not differ significantly on total DTLA Auditory-Verbal mean scores. Even though the Experimental Group's mean score was much higher than the Control Group's mean score, the difference between the two means was not significant; therefore, Null Hypothesis 3 was not rejected.

There was a significant difference between the Experimental and Control Groups' DTLA Verbal Absurdities mean scores. The Experimental Group's mean score was significantly higher than the Control Group's mean score; therefore, Corollary 3a was rejected.

There was not a significant difference between the Experimental and Control Groups' DTLA Auditory Attention Span mean scores. The Experimental Group's mean score was almost identical to the Control Group's mean score; therefore Corollary 3b was not rejected.

There was not a significant difference between the Experimental and Control Groups' DTLA Oral Directions mean scores. The Experimental Group's mean score was not significantly higher than the Control Group's mean score; therefore, Corollary 3c was not rejected.

There was not a significant difference between the Experimental and Control Groups' DTLA Likenesses and Differences mean scores. The Experimental Group's mean score was not significantly higher than the Control Group's mean score; therefore, Corollary 3d was not rejected.

School Achievement

There was not a significant difference between the Experimental and Control Group's PIAT mean scores on any of the school achievement measures. The Experimental Group's total achievement mean score was slightly higher than the Control Group's mean score but the difference between the two mean values was not significant; therefore, Hypothesis 4 was not rejected. Even though the Experimental Group's mean PIAT Mathematics score was much higher than the Control Group's mean score, the difference was not statistically significant; therefore, Corollary 4a was not rejected. Although the Experimental Group's PIAT Reading Recognition achievement mean score was higher than the Control Group's mean score, the difference was not statistically significant; therefore, Corollary 4b was not rejected. Even though the Control Group's mean percentile PIAT Reading Comprehension score was higher than the Experimental Group's mean score, the difference was not significant; therefore, Corollary 4c was not rejected. Even though the Experimental Group's mean PIAT Spelling score was much lower than the Control Group's mean score, the difference was not statistically significant; therefore, Corollary 4d was not rejected. Although the Experimental Group's mean PIAT General Information score was lower than the Control Group's mean score, the difference was not statistically significant; therefore, Corollary 4e was not rejected.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This study was undertaken to investigate the effects of a modified-traditional preschool intervention program (modified by a special type of communications training representative of the educational implications of Bernstein's theorizing) on the long-range intellectual performance, auditory-verbal learning aptitude, and school achievement of preschool economically-disadvantaged students.

An analysis of the results indicates that:

1. Students enrolled in a preschool class implementing a modified-traditional preschool program achieved greater long-range gains in intellectual performance than students enrolled in a preschool class utilizing a traditional program.

2. Students enrolled in a preschool class implementing a modified-traditional program did not display, five and six years later, a greater overall auditory-verbal learning aptitude than students enrolled in a preschool class implementing a traditional program. Students enrolled in a modified-traditional program, however, did tend to display, five and six years later, a greater verbal-expressive ability, but did not display greater auditory-attentive abilities than students enrolled in a traditional preschool class.

3. Students enrolled in a preschool class implementing a modified-traditional program did not display, five and six years later, a higher level of school achievement than students enrolled in a preschool class implementing a traditional program.

The aforementioned results indicate that the traditional preschool programs utilized with economically-disadvantaged children should be examined in terms of their long-range effectiveness in achieving their intended purpose of enhancing the overall intellectual performance of economically-disadvantaged children. Innovative communications training curriculums should be used to modify traditional programs in those instances where innovative communications curriculums have been shown to be more effective. In terms of producing positive long-range effects in general intellectual performance, the traditional preschool intervention program modified by the special communications training of the BPHDP utilized in the present study was shown to be more effective than a traditional program without modification by the special communications training curriculum.

Greater long-range gains in general intellectual performance were demonstrated by subjects in the experimental group, notwithstanding the fact that subjects in this group were provided with no additional teaching in the use of specific language forms or concepts, or in any type of content-related test material. The question then arises as to how to interpret the fact that significantly greater long-range gains were obtained by the experimental group. According to Bernstein's hypothesis, these gains were due to the practice the experimental subjects received in the relatively unfamiliar role and speech function requirements of formal school-type and test-taking situations in which speech functions to convey explicit, context-independent meanings and where the underlying role relationship of the speakers is based on an assumption of individual difference. On the other hand, greater long-range effects in more specific and academically-related aspects of intellectual functioning, as represented by scores on selected tests of auditory-verbal learning aptitude and school achievement, were not demonstrated by subjects in the experimental group. The question then arises as to the potential effectiveness of modified-traditional preschool intervention programs which provide some combination of communications training, specific academic training, and specific auditory-verbal training, or which incorporate into the existent framework of a communications training curriculum, such as the BPHDP, more specific academic and auditory-verbal training types of activities. This question appears to merit subsequent investigation.

The present investigation has contributed data necessary for an initial evaluation of one form of preschool intervention communications training representative of the educational implications of Bernstein's sociolinguistic theory of social class differences in educability as they apply to designing the contents and contexts of a classroom curriculum for economically-disadvantaged children. The results of this investigation suggest that innovative methods in communications training based on Bernstein's theorizing can be developed and incorporated into traditional preschool intervention programs in such a way as to significantly enhance the program's effectiveness in certain respects. The question of whether additional methods in communications training can be developed which are more effective than those used in the present study or whether those methods used in the present study can be supplemented or modified in such a way as to be more effective than they are presently, warrants further investigation. Numerous questions pertaining to the development of viable alternative instructional methods to enhance the education of economically-disadvantaged children have yet to be addressed. Various recommendations for further research are presented in the subsequent section of this paper.

Recommendations

The results of the present study indicate that preschool economically-disadvantaged students taught by a modified-traditional program achieve greater long-range gains in intellectual performance, but not greater long-range levels of school achievement or auditory-verbal aptitude. In view of the findings of the present investigation, the following recommendations would seem to be in order.

1. Traditionally-oriented preschool intervention programs should be examined to determine the feasibility of modifying these programs with some form of communications training based on Bernstein's theorizing.

2. Research should be executed to determine if a communications training curriculum that incorporates specific academic and auditory-verbal training is more effective than a communications training curriculum that focuses only on extending role and speech function repertoires.

3. Research should be initiated to determine if communications training is equally effective with various types of students. Specifically, research might be conducted to determine if there is an interaction between communications training procedures and student characteristics such as family income level, initial level of intellectual performance, age, and sex.

4. Research should be executed to determine if a communications training curriculum, such as the one utilized in this study is as effective as a highly-structured language curriculum which focuses on direct instruction in the use of specific language forms.

5. Research should be executed to examine what could be done in the way of communications training in the years after preschool to produce further benefits.

PRELIMINARY STUDY
CONDUCTED 1969-1971

APPENDIX A

PRELIMINARY STUDY
CONDUCTED 1969-1971

Definition of Terms

School Readiness: Student participants' scores from the Stanford-Binet Intelligence Scale, Form L-M (Terman and Merrill, 1960), the Harris-Goodenough Draw-A-Man Test (Harris, 1963), the Metropolitan School Readiness Tests (Hildreth, Griffiths, and McGauvran, 1969), and the Illinois Test of Psycholinguistic Abilities (Kirk, McCarthy, and Kirk, 1968).

Elaborated Coding Use: Student participants scores from the Verbal Expression and Auditory Reception subtests of the Illinois Test of Psycholinguistic Abilities.

Human Development Program: The activities outlined in the age 4 and age 5 curriculum guides of Methods in Human Development (Bessell and Palomares, 1967).

Traditional Preschool Program: The traditional, developmentally-oriented preschool curriculum (Community Action Program, Office of Economic Opportunity, 1967) generally implemented by all head start program centers in Oklahoma City, Oklahoma during the 1969-70 and 1970-71 school years.

Modified-Traditional Preschool Program: The traditional preschool program modified by implementation of the Human Development Program for approximately 15-20 minutes during the one hour time segment set aside each morning in the traditional program as a free-choice, work/play period.

Student Participants in Phase I of the Study: The thirty-two (N=32) economically-disadvantaged students who participated in either the modified-traditional program or the traditional program during the 1969-70 school year and served as subjects in that phase of the study conducted during the 1969-70 school year.

Student Participants in Phase II of the Study: The ten (N=10) economically-disadvantaged students who participated in either the modified-traditional program or the traditional program during both the 1969-70 and the 1970-71 school years and served as subjects during both the 1969-70 and 1970-71 school years.

Economically-Disadvantaged Students: Those children who participated in the study who qualified for head start program benefits during the 1969-70 and 1970-71 school years because of economic guidelines established by the Department of Health, Education, and Welfare of the federal government.

Purpose

During the 1969-70 and 1970-71 school years the investigator conducted a study to investigate the relative effectiveness of two preschool programs on the school readiness of economically-disadvantaged students: (a) a traditional preschool program and (b) a modified-traditional preschool program. For purposes of this investigation, economically-disadvantaged students were divided into the following groups:

> Control Group: Four and five year old economically-disadvantaged students enrolled in two preschool classes in which traditional preschool programs (Treatment A) were utilized.
>
> Experimental Group: Four and five year old economically-disadvantaged students enrolled in two preschool classes in which modified-traditional preschool programs (Treatment B) were utilized.
>
> The following questions were investigated:

1. After one year of participation in a class utilizing a modified-traditional program, do students achieve greater gains in school readiness than students participating in a class utilizing a traditional program?
2. After two years of participation in a class utilizing a modified-traditional program, do preschool students achieve a higher level of school readiness than preschool students participating in a class utilizing a traditional program?
3. After two years of participation in a class utilizing a modified-traditional program do preschool children achieve a higher level of elaborated coding use than preschool students participating in a class utilizing a traditional program?

Subjects

The subjects in this study consisted of four- and five-year old, economically-disadvantaged preschool students enrolled in the Discovery Child Development Center in Oklahoma City, Oklahoma during the 1969-70 and 1971 school years. The Discovery Child Development Center was a full-day, year-round, head start Day Care Program, funded through the U.S. Office of Economic Opportunity and delegated by the Oklahoma County Community Action Agency. The Discovery Center had been in operation since August, 1967. A total of 61 students (31 five year olds and 30 four year olds) were randomly assigned by age to the two treatment conditions. Twenty-five students (14 in Treatment B and 11 in Treatment A) withdrew before completion of phase I of the study. Four students were dropped from the study due to the termination of the teacher in charge of their treatment program. Statistical analysis of the data collected during phase I of the study was performed utilizing the remaining thirteen students in Treatment B and nineteen students in Treatment A. Information pertaining to the sample of phase I of this study is presented in Table A-1.

Table A-1

Descriptive Data Relative to the Subjects Participating in Phase I (1969-70) of the Study

Treatment	School Age Classification	Ethnic Background	Sex
A: Traditional (N=19)	8 Kindergarten 5 yr. olds 11 Prekindergarten 4 yr. olds	9 Indian 5 Caucasian 4 Negro 1 Mexican-Amer.	M = 13 F = 6
B: Modified (N=13)	8 Kindergarten 5 yr. olds 5 Prekindergarten 4 yr. olds	8 Caucasian 4 Indian 1 Negro	M = 7 F = 6
Total (N=32)	16 Kindergarten 5 yr. olds 16 Prekindergarten 4 yr. olds	13 Indian 13 Caucasian 5 Negro 1 Mexican-Amer.	M = 20 F = 12

Prior to the beginning of the 1970-71 school year, 22 more of the original 61 students were lost from the study. Sixteen of these 22 students were kindergarten age students graduating from the head start program and entering the first grade; the other six were pre-kindergarten age students who dropped out of the program. Ten students (5 experimental and 5 controls) remained in the study during the 1970-71 school year. Statistical analysis of the data collected during the 1970-71 school year, phase II of the study, was performed on these 10 students. Information pertaining to the sample of phase II of the study is presented in Table A-2.

Table A-2

Descriptive Data Relative to the Subjects
Participating in Phase II (1970-71) of the Study

Treatment	School Age Classification	Ethnic Background	Sex
A: Traditional (N=5)	5 Kindergarten 5 yr. olds	1 Caucasian 1 Indian 2 Negro 1 Mexican-Amer.	M = 3 F = 2
B: Modified (N=5)	5 Kindergarten 5 yr. olds	3 Caucasian 2 Indian	M = 2 F = 3
Total (N=10)	10 Kindergarten 5 yr. olds	4 Caucasian 3 Indian 2 Negro 1 Mexican-Amer.	M = 5 M = 5

Data Collection Procedures

Preassessment and postassessment. The preassessment (1969) of phase I of this study was administered prior to the designation of control and experimental classrooms. The Stanford-Binet Intelligence Scale, Form L-M (Terman and Merrill, 1960), and the Harris-Goodenough Draw-A-Man Test (Harris, 1963) were administered to each child, individually, during the months of September and October, 1969. During the first week of November, 1969, the Metropolitan Readiness Tests (Hildreth, Griffiths, and McGauvran, 1969) was administered to all of the five year old students (kindergarten age students) in randomly selected groups of ten. The postassessment (1970) of phase I was administered in like manner, six months after the implementation of the experimental treatment, in May, 1970.

The postassessment (1970) of phase I served as the preassessment of phase II of the study. The postassessment (1971) of phase II was administered in January 1971 to all phase I four year old students remaining in the experimental and control classrooms. These students were administered, individually, the Stanford-Binet and the Harris-Goodenough Draw-A-Man Test. Each student was also administered, individually, as a posttest only, the Illinois Test of Psycholinguistic Abilities (ITPA) (Kirk, McCarthy, and Kirk, 1968).

Administration Procedures

In August, 1969, the proposal to conduct this study with the four and five year old student population of Discovery Day Care Center was presented to the classroom staff of the center by the investigator, who was also the Teacher-Director of the center. The investigator presented the Human Development Program as a program designed to help children in their growth toward positive human relations. The theory and behavioral objectives of the program were presented, and the teaching techniques of the program demonstrated, by the investigator. At no time did the investigator reveal her intention of using the Human Development Program as a method of extending the children's use of language or enhancing their school readiness. The behavioral objectives of the program were presented in the format of the Bessell-Palomares Human Development Program Rating Scales. The investigator explained that the design of the study required that each member of the teaching staff be trained in the use of the rating scales and be responsible for completing a rating scale for each of their respective students at the beginning and end of the experimental study.

Each of the center's four classrooms of 20 children was staffed with one full-time paraprofessional "teacher" and one paraprofessional "teacher-aid." The training of the classroom staff in the use of the Bessell-Palomares Human Development Program Rating Scales was carried out by the investigator during a six week period in August and September of 1969, for a total of 12 hours.

In August, 1969 the total student population (ranging in age from 2 years 9 months to 5 years 9 months) of the Discovery Head Start Center was randomly assigned by age to one of the center's four classrooms, thereby providing each classroom with a mixed age grouping of students representative of the center's entire population. The kindergarten age students and the pre-kindergarten age (4 year old) students were given the preassessment during the months of September, October, and November of 1969. Following administration of the preassessment, two control and two experimental classrooms were designated. The students in the two control classrooms were taught in the traditional manner by the four paraprofessional classroom staff originally assigned to these classrooms. The students in the two experimental classrooms were taught in the modified-traditional manner by the four paraprofessional classroom staff originally assigned to these classrooms.

In order to assure that the traditional curriculum implemented in both the experimental and control classrooms was comparable, the Head Teacher of the center met weekly with each paraprofessional teacher to assist her in planning classroom activities in accordance with the basic curriculum and to ensure that each classroom was equipped with comparable materials with which to implement the curriculum.

In order to train the teachers in the experimental classrooms in the use of the Human Development Program, the investigator initiated the Human Development Program in the two experimental classrooms during the third week in November. The investigator conducted two Human Development communication circles 15 to 20 minutes daily, in each experimental classroom, one circle with the younger group of students and one with the older group of students. In each room, while one group of students was participating in the Human Development communication circles, the other group was engaged in "traditional" small group and/or individual activities in another section of the classroom under the supervision of one of the classroom staff. In order to counteract the possibility of the "Hawthorne" effect in the experimental rooms due to the extra attention given the teachers and the children by the interaction of a third teacher (the investigator), the Head Teacher of the center was assigned to the control classrooms to work with the teachers in developing new language materials and exercises and to demonstrate daily language development lessons (word building exercises and concept vocabulary picture sorting games) with small groups of the four and five year old students. The nature of these lessons was such that the verbal exchange between teacher and children was minimal.

The training of the classroom staff in the experimental classrooms in the application of the Human Development Program took place simultaneously with the investigator's implementation of the Human Development Program in these classrooms. The first phase of the training consisted of daily observation of the Human Development Program technique as demonstrated by the investigator in her daily application of the program, followed by feedback sessions between the classroom staff and the investigator. The second phase consisted of participation by the classroom staff in the communication circles and in the sharing of the leadership role with the investigator, again followed by daily feedback sessions with the investigator. In the third phase, the "teacher-trainee" assumed completed leadership of the communication circle, with the investigator observing, daily, and providing critical feedback. The length of this training period averaged about four to five weeks, after which the four teacher-trainees assumed complete responsibility for implementing the Human Development Program on a daily basis in their respective classrooms, with weekly supervision from the investigator. After about ten weeks of implementing the Human Development Program, three of the teachers in the experimental classrooms received further training in the application of the experimental program in a three-day Human Development Program Training Institute conducted by the co-author of the Program, Dr. Uvaldo Palomares, and his staff, the last week in March, 1970. None of the classroom staff in either the control or experimental classrooms was informed as to the actual purpose of the study. They operated under the assumption that the study was designed to investigate the effect of the Human Development Program on growth toward positive human relations as measured by change scores obtained from pre- and postassessment with the Bessell-Palomares Human Development Rating Scales.

Data

Some of the data collected from the Experimental and Control Groups tended to be significantly different in spite of the small numbers in the two groups. The data recorded for subjects from both groups which indicated significant differences between the Experimental and Control groups are summarized and presented in Table A-3. The complete data collected in phase I and phase II of this preliminary study are presented in Tables A-4, A-5, A-6, A-7, A-8, A-9, and A-10.

Table A-3

Gain Scores Recorded for Subjects Indicating Significant Differences Between Experimental and Control Groups

EXPERIMENTAL GROUP					CONTROL GROUP				
			ITPA* Post 1971					ITPA* Post 1971	
Subject Number	Binet IQ Gain Scores 1969 & 1970	Listening-Readiness Gain 1969 & 1970	Auditory Reception	Verbal Expression	Subject Number	Binet IQ Gain Scores 1969 & 1970	Listening-Readiness Gain 1969 & 1970	Auditory Reception	Verbal Expression
1.	+ 8	+10			1.	- 8	+ 1		
2.	+ 7	+ 4			2.	+18	- 1		
3.	+11	+10			3.	+ 6	+ 1		
4.	+13	+11			4.	- 2	+ 3		
5.	0	+ 6			5.	- 1	0		
6.	+ 1	+ 2			6.	+ 1	- 1		
7.	+24	+ 3			7.	+ 9	+ 5		
8.	+12	+ 1			8.	+ 8	- 4		
9.	+28		35	34	9.	+15		16	32
10.	0		36	44	10.	+ 7		35	33
11.	+20		32	41	11.	+ 7		34	38
12.	+21		39	45	12.	+ 8		30	37
13.	+ 6		34	39	13.	+ 2		29	25
					14.	+ 7			
					15.	+10			
					16.	+ 3			
					17.	+17			
					18.	+ 7			
					19.	+11			

*Illinois Test of Psycholinguistic Abilities

Table A-4

A Comparison of Stanford-Binet IQ Scores Recorded for the Experimental and Control Groups in Phase I (1969-70) of the Preliminary Study

Experimental Group				Control Group			
Subject	Pre 1969	Post[1] 1970	Gain Pre & Post[1]	Subject	Pre 1969	Post[1] 1970	Gain Pre & Post[1]
S_1	103	111	8	S_1	96	88	-8
S_2	84	91	7	S_2	86	104	18
S_3	83	94	11	S_3	72	78	6
S_4	89	102	13	S_4	107	105	-2
S_5	103	103	0	S_5	94	93	-1
S_6	97	98	1	S_6	114	115	1
S_7	68	92	24	S_7	89	98	9
S_8	78	90	12	S_8	91	99	8
S_9	70	98	28	S_9	83	98	15
S_{10}	84	84	0	S_{10}	91	98	7
S_{11}	90	110	20	S_{11}	70	77	7
S_{12}	105	126	21	S_{12}	92	100	8
S_{13}	94	100	6	S_{13}	83	85	2
				S_{14}	94	101	7
				S_{15}	92	102	10
				S_{16}	94	97	3
				S_{17}	88	105	17
				S_{18}	86	93	7
				S_{19}	101	112	11
Mean	88.31	99.92	11.62		90.68	97.26	6.58
sd			8.91				6.33

Table A-5

A Comparison of Draw-A-Man IQ Scores Recorded for the Experimental and Control Groups in Phase I (1969-70) of the Preliminary Study

Experimental Group				Control Group			
Subject	Pre 1969	Post 1970	Gain Pre & Post	Subject	Pre 1969	Post 1970	Gain Pre & Post
S_1	90	92	2.0	S_1	89	93	4.0
S_2	90	75	15.0	S_2	73	86	13.0
S_3	95	93	-2.0	S_3	88	102.6	14.6
S_4	132	116	-16.0	S_4	122.9	113.0	-9.9
S_5	86.4	92.6	6.2	S_5	100	105	5.0
S_6	101.4	93.5	-7.9	S_6	116	125	0.0
S_7	76.2	90.0	13.8	S_7	107	101	-6.0
S_8	106.2	82.2	-18.0	S_8	75	79	4.0
S_9	77.7	98.3	20.6	S_9	96.6	100	3.4
S_{10}	96.4	90.4	-6.0	S_{10}	90.5	103.2	12.7
S_{11}	103.4	106.1	2.7	S_{11}	84.2	98.4	14.2
S_{12}	121.2	147.3	26.1	S_{12}	74.0	78.4	4.4
S_{13}	93.7	133.3	39.6	S_{13}	74.0	74.0	0
				S_{14}	108.5	88.8	-19.7
				S_{15}	92.7	80.9	-11.8
				S_{16}	113.7	111.9	1.8
				S_{17}	89.4	112.5	23.1
				S_{18}	85.7	107.8	22.1
				S_{19}	98.1	98.4	.3
Mean	97.66	103.51	5.85		93.59	98.02	4.43
sd			16.12				17.61

Table A-6

A Comparison of Metropolitan Readiness Tests Scores Recorded
for the 5 yr. old Control Group in Phase I (1969-70) of the Preliminary Study

Subject	Word Meaning			Listening			Matching			Alphabet			Numbers			Copying			Total		
	Pre 1969	Post 1970	Gain	Pre 1969	Post 1970	Gain	Pre 1969	Post 1970	Gain	Pre 1969	Post 1970	Gain	Pre 1969	Post 1970	Gain	Pre 1969	Post 1970	Gain	Pre 1969	Post 1970	Gain
S_1	7	4	-3	10	11	+1	4	4	0	0	5	+5	5	8	+3	4	2	-2	30	34	+4
S_2	5	7	+2	8	7	-1	4	5	+1	7	10	+3	3	8	+5	3	5	+2	30	42	+12
S_3	6	7	+1	7	8	+1	3	0	-3	8	0	-8	3	3	0	0	2	+2	27	20	-7
S_4	6	5	-1	8	11	+3	5	4	-1	3	7	+4	6	9	+3	2	4	+2	30	40	+10
S_5	6	5	-1	9	9	0	8	8	0	6	4	-2	10	9	-1	11	5	-6	50	40	-10
S_6	9	10	+1	9	8	-1	1	5	-4	9	9	0	3	10	+7	2	2	0	33	44	+11
S_7	3	6	+3	8	13	+5	5	7	+2	0	5	+5	2	10	+8	0	4	+4	18	45	+27
S_8	4	6	+2	8	4	-4	1	0	-1	0	3	+3	3	7	+4	0	0	0	16	20	+4
Mean			.50	8.38	8.88	.50			-.75			1.25			3.63			.25	29.25	35.63	6.48
sd						2.57															10.81

Table A-7

A Comparison of Metropolitan Readiness Tests Scores Recorded for the 5 yr. old Experimental Group in Phase I (1969-70) of the Preliminary Study

Subject	Word Meaning			Listening			Matching			Alphabet			Numbers			Copying			Total		
	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain	Pre	Post	Gain
S_1	9	10	+1	0	10	+10	0	8	+8	3	6	+3	12	13	+1	2	4	+2	26	51	+25
S_2	8	4	-4	8	12	+4	4	3	-1	2	0	-2	3	4	+1	0	0	0	25	23	-2
S_3	4	7	+3	0	10	+10	5	1	-4	3	4	+1	5	7	+2	2	3	+1	19	32	+13
S_4	5	9	+4	0	11	+11	5	4	-1	6	4	-2	5	7	+2	1	2	+1	22	37	+15
S_5	5	6	+1	7	13	+6	3	5	+2	6	6	0	7	9	+2	0	1	+1	28	40	+12
S_6	5	8	+3	6	8	+2	8	3	-5	9	15	+6	11	16	+5	4	3	-1	43	53	+10
S_7	2	4	+2	8	11	+3	2	0	-2	1	6	+5	6	6	0	0	0	0	19	27	+8
S_8	5	7	+2	6	.7	+1		10			10			9			2			45	
Mean			1.50	4.38	10.26	5.88			-.43			1.57			1.86			.57	26.0	37.57	11.59
sd						3.73															6.16

Table A-8

A Comparison of all Stanford-Binet IQ Scores
Recorded for the Experimental and Control
Groups in Phase II (1970-71) of the Preliminary Study

Experimental Group						
Subject	Pre 1969	Post[1] 1970	Post[2] 1971	Gain Pre & Post[1]	Gain Post[1] & Post[2]	Gain Pre[1] & Post[2]
S_1	70	98	92	28	-6	22
S_2	84	84	97	0	13	13
S_3	90	110	106	20	-4	16
S_4	105	126	116	21	-10	11
S_5	94	100	114	6	14	20
Mean	88.6	103.6	105.0	15.0	1.40	16.40
sd						4.13

Control Group						
Subject	Pre 1969	Post[1] 1970	Post[2] 1971	Gain Pre & Post[1]	Gain Post[1] & Post[2]	Gain Pre[1] & Post[2]
S_1	83	98	93	15	-5	10
S_2	91	98	108	7	10	17
S_3	94	101	112	7	11	18
S_4	92	102	108	10	6	16
S_5	94	97	102	3	5	8
Mean	90.8	99.2	104.6	8.4	5.4	13.80
sd						4.02

Table A-9

A Comparison of all <u>Draw-A-Man</u> IQ Scores Recorded for the Experimental and Control Groups in Phase II (1970-71) of the Preliminary Study

Experimental Group

Subject	Pre 1969	Post[1] 1970	Post[2] 1971	Gain Pre & Post[1]	Gain Post[1] & Post[2]	Gain Pre & Post[2]
S_1	77.7	98.3	100.0	20.6	1.7	22.3
S_2	96.4	90.4	107.1	-6.0	16.7	10.7
S_3	103.4	106.1	113.5	2.7	7.4	10.4
S_4	121.2	147.3	128.7	26.1	-18.6	7.5
S_5	93.7	133.3	120.9	39.6	-12.4	27.2
Mean	98.48	115.08	114.04	16.6	-1.04	15.65
sd						7.70

Control Group

Subject	Pre 1969	Post[1] 1970	Post[2] 1971	Gain Pre & Post[1]	Gain Post[1] & Post[2]	Gain Pre & Post[2]
S_1	96.6	100	106.8	3.4	6.8	10.2
S_2	90.5	103.2	78.2	12.7	-25.0	-12.3
S_3	108.5	88.8	80.9	14.2	-7.9	-27.6
S_4	92.7	80.9	126.8	4.4	45.9	34.1
S_5	113.7	111.9	102.7	0	-8.4	-11.0
Mean	100.4	96.96	99.08	6.94	2.68	-1.32
sd						21.41

Table A-10

The Illinois Test of Psycholinguistic Abilities Scaled Scores for the Control and Experimental Groups in Phase II (1970-71) of the Preliminary Study

Experimental Group

Subject	Auditory Reception	Auditory Association	Verbal Expression	Visual Reception	Visual Association	Motor Expression	Auditory Memory	Grammatical Closure	Visual Memory	Visual Closure	Mean
S_1	35	20	34	28	30	30	38	24	32	27	29.8
S_2	36	34	44	39	42	40	33	36	36	27	36.7
S_3	32	36	41	40	36	40	29	28	34	45	36.1
S_4	39	40	45	34	37	36	35	32	40	50	38.8
S_5	34	29	39	31	37	36	41	30	45	37	35.9
Mean	35.20	31.8	40.6	34.4	36.4	36.4	35.2	30.0	37.4	37.2	35.46
SD	2.32		3.92								3.01

Control Group

Subject	Auditory Reception	Auditory Association	Verbal Expression	Visual Reception	Visual Association	Motor Expression	Auditory Memory	Grammatical Closure	Visual Memory	Visual Closure	Mean
S_1	16	18	32	40	33	33	32	26	36	36	30
S_2	35	26	33	26	46	32	32	28	30	37	32.5
S_3	34	37	38	41	43	35	51	32	26	37	37.4
S_4	30	28	37	33	42	39	39	22	38	44	35.2
S_5	29	35	25	30	36	29	36	31	42	53	34.6
Mean	28.8	28.8	33.0	34.0	40.0	33.6	38.0	27.8	34.4	41.4	33.94
SD	6.80		4.60								2.50

Statistical Comparisons Made

Statistical comparisons were made among gain scores from the Stanford-Binet Intelligence Scale, Form L-M, among gain scores from the Harris-Goodenough Draw-A-Man Test, among gain scores from the Metropolitan Readiness Tests and among posttest scores from the ITPA. The results of these comparisons are summarized in Table A-11.

Table A-11

Summary of Comparisons Made Between the Experimental and Control Groups' Mean Scores

Statistical Comparison Made	Experimental Group Mean	Experimental Group Standard Deviation	Control Group Mean	Control Group Standard Deviation	Statistical Results
1. Stanford-Binet IQ Test Gain Scores, 1969 & 1970	11.62	8.91	6.58	6.33	t=1.76;df=30;p<.05
2. Stanford-Binet IQ Test Gain Scores, 1969 & 1971	16.40	4.13	13.80	4.02	t=1.009;df=8;p>.05
3. Harris-Goodenough IQ Test Gain Scores, 1969 & 1970	5.853	16.12	4.43	17.61	t=0.380;df=30;p>.05
4. Harris-Goodenough IQ Test Gain Scores, 1969 & 1971	15.62	7.70	-1.32	21.41	t=1.665;df=8;p>.05
5. Metropolitan Readiness Listening Subtest Gain Scores 1969 & 1970	5.88	3.73	0.50	2.57	t=3.358;df=14;p<.05
6. Metropolitan Readiness Total Gain Scores 1969 & 1970	11.57	6.16	6.38	10.81	t=1.16;df=13;p>.05
7. ITPA Auditory Reception Scores, Post, 1971	35.20	2.32	28.30	6.80	t=1.993;df=8;p<.05
8. ITPA Verbal Expression Scores, Post, 1971	40.60	3.92	33.00	4.60	t=2.809;df=8;p<.05
9. ITPA Total Scores, Post, 1971	35.46	3.01	33.94	2.50	t=8.68;df=8;p>.05

Results

The results presented in Table A-11 are summarized below.

1. Students in the modified-traditional preschool program made significantly greater gains in Stanford-Binet IQ scores during the first year of the study than students in the traditional preschool training program, but differences between the two groups' scores taken from the Harris-Goodenough Draw-A-Man Test were not significant.

2. Students in the modified-traditional preschool training program scored significantly greater gains on the Listening subtest of the Metropolitan Readiness Tests during the first year of the study than students in the traditional preschool training program, but differences between the two groups' total Metropolitan Readiness Tests scores were not significant.

3. Students in the modified-traditional preschool training program scored significantly higher on both the Auditory Reception subtest and the Verbal Expression subtest of the ITPA than students in the traditional preschool training program, but differences between the two groups' total ITPA scores were not significant.

Conclusions

Results of the preliminary study led to the conclusion that the Bessell-Palomares Human Development Program was instrumental in developing the listening and verbal skills of students participating in the modified-traditional preschool training program. It was further concluded that the modified-traditional preschool training program was more conducive to increasing the students' Stanford-Binet IQ test scores during the first year of the study than the traditional preschool training program. This was hypothesized earlier and borne out by the results of the study.

DATA RECORDED FOR
PRESENT STUDY, 1976

APPENDIX B

Table B-1

A Comparison of Initial Test, Posttest, and Followup Stanford-Binet IQ Scores Recorded for the Control and Experimental Groups

Control Group

Subject	Initial Test 1969	Posttest 1970 & 1971	Followup Test 1976	Gain Initial & Followup	Gain Post & Followup
S_1	96	88	102	6	14
S_2	86	104	89	3	-15
S_3	72	78	91	19	13
S_4	114	115	97	-17	-18
S_5	89	98	106	17	8
S_6	91	99	91	0	-8
S_7	91	108	81	-10	-27
S_8	94	112	82	-12	-30
S_9	92	108	88	-4	-20
S_{10}	94	102	117	23	15
Mean	91.90	101.20	94.40	2.50	-6.80
sd	9.757	9.695	10.66	12.72	16.83

Experimental Group

Subject	Initial Test 1969	Posttest 1970 & 1971	Followup Test 1976	Gain Initial & Followup	Gain Post & Followup
S_1	84	91	80	-4	-11
S_2	89	102	113	24	11
S_3	97	98	94	-3	-4
S_4	68	92	85	17	-7
S_5	70	92	86	16	-6
S_6	84	97	102	18	5
S_7	90	106	106	16	0
S_8	105	116	116	-11	0
Mean	85.88	99.25	97.75	11.88	-1.50
sd	10.46	8.01	12.65	9.48	6.71

Table B-2

The Control Group's Chronological Ages, Test Age Scores, and Age-difference Scores in Months Taken from the Detroit Tests of Learning Aptitude

Subject	Subject's Chronological Age in Months	Verbal Absurdities Age Score	V-A Diff. Score	Auditory Attention Age Score	A-A Diff. Score	Oral Directions Age Score	O-D Diff. Score	Likenesses & Differences Age Score	L&D Diff. Score	Median Age Score	Median Diff. Score
1.	144	162	18	93	-51	99	-45	195	51	137	-7
2.	150	144	-6	96	-54	87	-63	186	36	127	-23
3.	150	141	-9	114	-36	105	-45	177	27	135	-15
4.	139	162	23	72	-67	123	-16	174	35	141	-2
5.	150	165	15	132	-18	123	-27	192	42	152	-2
6.	145	126	-19	150	-5	135	-10	180	35	148	-3
7.	134	111	-23	60	-74	99	-35	105	-29	93	-41
8.	140	153	13	114	-26	117	-23	162	22	135	-5
9.	136	66	-70	93	-43	147	11	174	38	121	-15
10.	138	171	33	141	3	141	3	204	66	163	25
Mean			-2.5		-27.7		-25.0		32.3		-8.8
sd			28.60		29.83		21.77		23.52		28.13

Table B-3

The Experimental Group's Chronological Age, Test Age Scores and Age-difference Scores in Months Taken from the <u>Detroit Tests of Learning Aptitude</u>

Subject	Subject's Chronological Age in Months	Verbal Absurdities Age Score	V-A Diff. Score	Auditory Attention Age Score	A-A Diff. Score	Oral Directions Age Score	O-D Diff. Score	Likenesses & Differences Age Score	L&D Diff. Score	Median Age Score	Median Diff. Score
S_1	145	159	14	63	-82	123	-22	159	14	126	-19
S_2	139	171	32	84	-55	123	-16	195	56	150	13
S_3	150	162	12	102	-48	111	-39	204	54	145	-5
S_4	142	150	8	81	-61	108	-34	186	44	128	-14
S_5	133	126	-7	120	-13	135	2	177	44	139	-6
S_6	136	150	14	117	-19	72	-64	195	59	153	17
S_7	127	144	17	123	-4	141	14	168	41	149	22
S_8	126	168	42	111	-15	165	39	192	66	159	33
Mean			16.5		-37.12		-15.0		47.25		5.12
sd			13.92		26.26		30.48		14.91		16.13

Table B-4

The Control and Experimental Group's Percentile Scores from the Peabody Individual Achievement Test

Control Group						
Subject	Math	Reading Recognition	Reading Comprehension	Spelling	General Information	Total
S_1	34	35	46	47	44	34
S_2	12	35	18	32	47	24
S_3	30	6	4	25	39	10
S_4	41	34	72	26	48	36
S_5	40	61	57	18	47	38
S_6	23	56	13	51	30	27
S_7	24	32	42	39	15	22
S_8	12	5	1	6	14	4
S_9	40	21	21	15	17	17
S_{10}	83	46	52	81	63	67
Mean	33.90	33.10	32.60	34.00	36.40	27.90
sd	26.26	28.14	24.71	22.91	20.28	19.23

Experimental Group						
Subject	Math	Reading Recognition	Reading Comprehension	Spelling	General Information	Total
S_1	41	5	1	2	19	5
S_2	61	55	36	29	23	36
S_3	76	57	53	11	14	34
S_4	12	19	10	2	10	6
S_5	24	24	14	15	41	20
S_6	57	40	43	15	66	36
S_7	64	53	47	49	35	47
S_8	50	32	38	45	79	41
Mean	43.50	35.63	30.25	21.00	35.88	28.13
sd	29.69	26.41	24.31	19.22	24.06	21.22

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