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ABSTRACT

Treatment verification methodology was employed in studying the Chicago Child Parent Center (CPC) compensatory education program. Established in disadvantaged areas by the Chicago public schools, CPCs are designed to break the cycle of poverty through educational intervention with children at ages 3 through 8. An element of evaluation studies that include experimental designs, treatment verification is the rigorous documentation of the degree and/or type of implementation of an intended treatment. In this study, 43 classroom observations were conducted by 22 observers in randomly selected CPC and control classrooms in order to verify that CPC treatment differed significantly from conventional treatment and that CPC treatment was being implemented as intended and to test the hypothesis that program outcomes resulted from differences in program treatment. To delineate CPC program processes, four scales were composed from the Classroom Observation Rating Scale (CORS). The scales were titled Enriched Environment, Child-centeredness, Parent Involvement and Presence of Evaluation of Student Achievement. In addition, parent involvement was assessed using self-reports from parent interviews. Relationships and variables were examined using analysis of variance, multiple regression, discriminant functions analysis and factor analysis. Among the results, findings indicate that children in CPC classes scored higher on all intended processes, but only the child-centeredness and evaluation scales showed statistically significant differences. (Author/RH)

Treatment Verification:
Multiple Analytical Methods and a Search for Causality in the Child Parent Center Compensatory Education Program

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THEORETICAL BACKGROUND

This research employs a treatment verification methodology in studying the Chicago Child Parent Center compensatory education program. Compensatory education programs are programs intended to overcome the ill effects of economic deprivation. Compensatory education programs have, of course, been studied before most notably, the Head Start program and the Follow Through program. The major evaluation of Head Start was commissioned by the Office of Economic Opportunity in 1968 and is known as the Westinghouse/Ohio University Report (Cicirelli, et al., 1969). The results of the report were generally negative insofar as the evaluation failed to establish any substantial cognitive gains as a result of program participation. The Westinghouse evaluation examined the effects of summer programs and full year programs. Head Start participants and non-participants were compared in each of grades 1 - and 2. Specific findings were as follow:

--No significant differences were found between summer program participants and controls at any grade level.

--Full year Head Start participants were out-performed by controls on the Metropolitan Readiness Test by a small but statistically significant amount.

--There were no significant differences in scores on the Stanford Achievement Test at the beginning of grades 2 and 3.

--No differences were found in children's self-concept or in teacher ratings of classroom behavior for Head Start vs. comparison group children.

These findings began a continuing discussion of methodology in evaluating large social programs. Many problems flawed the Head Start

program and its evaluation, but the main problems of concern here are that Head Start treatment was poorly specified and that implementation of treatment was poorly verified. Head Start Centers had no single curriculum. Treatment varied widely from one center to another. Most centers had "permissive enrichment" programs, a "whole-child orientation," and a low degree of structure. The program developers and evaluators viewed this loose curriculum as a kind of "black box" which should have beneficial effects. Because the specification of treatment was so vague, it was extremely difficult to give reasons for the findings. This lack of explanatory power provided important impetus for the development of a methodology for verifying the implementation of the intended treatment.

Treatment verification is the rigorous documentation of the degree of and/or the type of implementation of an intended treatment. The treatment-control experimental model assumes that the treatment must be clearly specified and that implementation of the treatment must be clearly verified. If verification cannot be made, inferences regarding treatment effects cannot be regarded as valid. To put it another way, without treatment verification a finding of "no effect" could easily be the result of "no experiment" (Leonard and Lowery, 1979). In program evaluations, the fact is that the existence of clearly stated program goals (the intended experimental treatment) does not automatically imply the implementation of those goals (Charters and Jones, 1973). Without treatment verification there is absolutely no way to guarantee that the intended differences between instructional methods actually did occur because of the intended treatment.

In evaluation literature there has been a growing awareness of the

need for treatment verification because of the inherent difficulties of conducting experiments in naturalistic settings and the current lack of explanatory power. The logic for improving the methodology of treatment verification may be stated as follows: 1) Evaluations which employ quasi-experimental designs are desirable because such designs attempt causal inferences and provide indications of cause-effect. 2) When the existence of conditions necessary for a quasi-experiment are in doubt, the validity of the inferences concerning outcomes is in doubt. 3) A way to ensure more reliable outcomes is to verify the existence of an intended program by way of a quasi-experiment. A brief review can serve to demonstrate the development of the current awareness of the need for treatment verification in evaluations employing quasi-experimental designs.

In 1963, Cronbach observed that process measures have special value in showing how a course can be improved because they examine what happens during instruction. In spite of this, he concluded that formal studies should be designed "primarily to determine the over-all course performance of a well-described group with respect to important objectives and side-effects" (Cronbach, 1963). This statement indicates a belief that quasi-experiments strong enough to support conclusions could be conducted in naturalistic settings.

Scriven (1967) pointed out how process studies are related to the investigation of causal claims about the process, and distinguished between formative and summative roles of evaluation, although he did not delineate the significance of process studies in summative evaluations.

Before going further it is important to clarify the distinction between treatment verification and formative evaluation since both focus upon the processes of the program. As Scriven defines it formative

...on is concerned with the ongoing improvement of the curriculum. ...rast, Scriven ...efines the role of summative evaluation as: "to ...whether the entire finished curriculum, refined by use of the ...tion process in its first (formative) role, represents a ...ently significant advance on the available alternatives to ...fy the expense of adoption by [illegible]" (Scriven, 1967). ...ar a summative evaluation is ba... ... specified time limits ...disinterested outside party, formative evaluation involves a kind ...ntinuing partnership between the curriculum evaluator and the ...riculum developer, a partnership designed to develop and improve the ...riculum. The goal of a formative eva...on will usually be to ...ify that the intended program is actually being implemented and not ...essarily to determine whether the implemented program is an ...rovement over the old program.

Summative evaluation views the curriculum as already "developed" and ...esses its effects as a finished product. The role of the summative ...luation is not to develop a program but to determine how the program ...its particular manifestation compares to conventional programs. In a summative evaluation, the study of the program's processes is not primarily intended to promote an improvement in those processes but rather to provide an explanation of or an accounting for the summative findings; i.e. to verify that there actually was a quasi-experiment. Of course, the findings of the treatment ...rification may be used to improve the program, but they may also be used as a rationale to discontinue the program or to increase or decrease implementation of the program as it is. Although the formative-summative dichotomy is useful conceptually, the neat distinction between formative and summative evaluations breaks down in actual practice, where elements of both

evaluation types usually come into play. Strictly speaking, there is no such thing as a summative, in the sense of "final" evaluation. Every evaluation should contribute to forming better programs. Treatment verification can be viewed as the study of process in a "summative" evaluation whose purpose is not merely to provide information for decision making, but also to provide explanatory power.

Provus (1969), after concluding that quasi-experimental designs were inapplicable to evaluations of new programs, delineated a model for analyzing discrepancies between program definition and program installation. In this model, the goal of evaluation was to determine whether to improve, maintain, or terminate a given program. The method may be briefly summarized as; a) define program standards; b) look for a discrepancy between observations about the program and the standards for that program; c) use the discrepancy information as feedback to the program developers. The model is useful in program development, but in the summative role it could be criticized for not using comparison groups. Without comparison groups we cannot conclude that the program is different from or better than other programs.

At this point, we seem to arrive at an awareness that what is needed is a hybrid of the summative and the formative, some kind of quasi-experiment which includes process measures. Wittrock (1970), for example, criticized evaluations which measured only the end behaviors and not the process characteristics of the environment, the teachers, the learners, and the school as a social system. Schwab (1969) said: "What is wanted is a totally new and extensive pattern of empirical study of classroom action and reaction; a study, not as basis for theoretical concerns about the nature of the teaching or learning process, but as a basis for beginning to know what we are doing, and to

what effect--what changes are needed, which needed changes can be instituted with what costs or economies, and how they can be effected with minimum tearing of the remaining fabric of educational effort."

In spite of this growing awareness of the need to study processes in order to account for outcomes, actual evaluations of school programs typically continued to concentrate on outcomes (usually achievement alone). Actual attention was paid to process variables in such areas as research on teaching (Rosenshine and Furst, 1973; Anderson, Evertson, and Brophy, 1979); but these studies still were conducted in controlled settings where training and manipulation of teacher behavior were done and a particular treatment or instructional model was imposed, a strategy which is rarely feasible in program evaluations.

One notable attempt to achieve experimental conditions in the evaluation of whole programs was the Follow Through program. Beginning in 1967, Follow Through was intended as a strategy for intensifying compensatory education, thereby amplifying effects. At the same time it was an attempt to improve evaluation since it was conceived as a planned variation experiment which systematically would compare pupils enrolled in different Follow Through models of early childhood education to each other and to pupils from non-Follow Through classes to determine which models were best (Haney, 1977).

The major and least disputable finding of the Follow Through evaluation was that intersite variation was more important to achievement than was variation between models. In other words, the unique features of the local settings had more effects on test scores than did the Follow Through models. The evaluation was unable to conclusively determine which models were best (House, 1978).

Kennedy (1978) concluded that two of the strongest reasons for the

Failure to find differential model effects were: 1) tests that did not equally reflect the goals of all the models; and 2) failure to adequately verify the implementation of models. As was observed earlier, the failure to verify treatment results in an inability to conclude that an experiment actually took place. Therefore, Follow Through showed clearly the need for treatment verification in program evaluations which involve quasi-experimental designs. When one considers the myriad of factors that comprise the implementation of a treatment and the fact that each curriculum combines some or all of these factors in greater or lesser degrees in response to its own particular social and educational context, one begins to realize the complexity and difficulty of documenting differences. To simplify the evaluation task, House (1978) concluded that massive experiments with narrow outcome measures are no longer needed. The alternative is to do smaller studies employing rigorous methodology and having multiple measures of processes and outcomes.

THE METHODOLOGY OF TREATMENT VERIFICATION

The inability to make causal attributions for findings of "effect" or "no effect" in program evaluations has increasingly led to inquiry into what Cooley (1978) calls "explanatory observational studies." An observational study involves the collection and analysis of data for the purpose of describing what conditions exist and telling how much they exist. An explanatory study involves the inclusion of causal hypotheses and data which attempt to explain why the observed conditions exist (Wold, 1956). Cooley delineated the critical features of explanatory observational studies under the following three topics:

1. The sampling framework, which affects the generalizability of the observed relationships.
2. The theoretical model, which describes the hypothesized causal structure of the variables under consideration.
3. The statistical procedures, which are used to analyze the network of observed relationships for the purpose of establishing the plausibility of the theoretical model and estimating its parameters (Cooley, 1978, p. 10).

The Sampling Framework. In discussing the sampling framework, Cooley identifies "two branches" in the literature on observational studies. Of the one which he refers to as "multi-population," he says: "One branch, exemplified by the writings of Cochran (1965) and others (e.g. Lord, 1960; Kenny, 1975; Overall and Woodward, 1975), deals with multi-population observational studies, in which different samples are administered different treatments, but random assignment of subjects to treatments is absent" (1978). A good example of this type of study is Follow Through because different sample groups chose different models (no random assignment) and implemented them as part of the Follow Through program (intervention with different treatments).

In contrast to these "multi-population" studies are observational studies that involve a "single population" (e.g. Wold, 1956; Wiley and Hornik, 1973). Cooley says: "In such studies, one defines a population, draws a sample from it, and studies the relationships among variables measured on that sample" (1978). The multi-population design of Follow Through had problems because it did not draw a representative sample of schools and did not randomly assign schools to treatments, thus losing both external and internal validity.

The Theoretical Model. The need for theoretical models is founded in the need for an explanation of the causes of observed effects. Scientists, policy-makers, and the general public are not satisfied with a mere description of a phenomenon. We want to know why it exists. In quasi-experiments, of course, we cannot make clear and certain causal attributions, but we can provide data which tend to confirm or fail to confirm hypothesized causal explanations.

Every program has a theoretical causal model, even if that model is vague or implicit. It is the job of the program evaluator to be sure that the causal model is clearly specified so that he may construct clear, falsifiable hypotheses regarding causality. The causal model and its consequent hypotheses will serve to guide the design of the study, the sources of data, the procedures for collecting data, and the procedures for analyzing data.

The Statistical Procedures. The statistical procedures are the means for providing quantitative information which confirms or fails to confirm the plausibility of the theoretical model. In program evaluations it is unlikely to have a single variable which will enable a crucial test of a hypothesis. Rather, many variables must usually be examined in an effort to assess the various program processes and outcomes. Therefore, the statistical procedures should be appropriate for the theoretical model. In explanatory observational studies, for example, multiple regression has been shown to have convincing applications in making causal inferences (Leinhardt, 1980).

PROBLEM TO BE INVESTIGATED

Child Parent Centers (CPC) have been established in certain disadvantaged areas of Chicago to provide systematic educational experiences for preschool children starting as young as three years of age and continuing through age cycle eight. The pre-school children (age 3 through kindergarten) are taught in half-day sessions in centers affiliated with but in buildings separate from a Chicago Public Elementary School. The pre-school classes are called CPC's. A room in each center is designated a "parents' room," and class size is 15. The first through third grade classes are held in specially designated classrooms in the main building of the sponsoring public school. These classrooms are called Child Parent Expansion (CPX) classes. They are intended to receive the same services as CPC classrooms, but no parent room is provided, and class size is 25. This paper will refer to both types of classroom as CPC's unless it is necessary to distinguish between them.

The distinguishing characteristics of CPC's are their emphasis on parent involvement and on a structured language/basic skills curriculum.

The rationale underlying the CPC's is fundamentally similar to that of other early childhood compensatory education programs, most notably Head Start and Follow Through. Like these two massive programs, the CPC intends to break the cycle of poverty through an early (age three through eight), intense, systematic, and continuous educational intervention. The CPC's provide the following materials and services:

1. Parents or guardians are asked to spend the equivalent of two days (four half-days) a month at the center because parent participation is considered an integral part of the curriculum design.

2. Half-day classes are held for an average membership of seventeen pupils per class, age three through kindergarten.
3. Full-day classes are held for an average membership of twenty-five pupils per class, grade one through grade three.
4. Audiovisual equipment and culturally oriented materials, geared to the levels of the participating pupils, are in all of the centers.
5. Pupils participating in the activity in the morning session are provided with a breakfast and lunch at the center, and pupils attending the afternoon session are served a snack.
6. The centers are administered by the principal of the parent school to which the CPC is affiliated.
7. Each center is assigned one teacher and one teacher aide for each class.
8. Each center is also assigned the following: a parent-resource teacher, a school and community representative, a school clerk, and a janitor. One head teacher, freed of classroom duties, is provided at each center.
9. The centers share the services of speech therapists, social workers, school nurses, licensed practical nurses, and health aides with the affiliated schools.

THE RESEARCH DESIGN AND FINDINGS

The treatment verification study of Chicago Child Parent Centers had three goals:

--To verify that CPC treatment is significantly different from the conventional treatment.

--To verify that CPC treatment is being implemented as intended.

--To provide information which supports or fails to support the hypothesis that program outcomes are due to differences in program treatments.

To accomplish these goals, the three issues addressed by Cooley (1978) were reiterated here.

The Sampling Framework and Data Collection. The sample population of the treatment verification study was composed of classrooms of students from two age cohorts (age cycle 5 and age cycle 8) in four CPC's and affiliated public schools without CPC's. The students from the conventional schools served as controls. All schools were located in the same school district and served similar disadvantaged populations of whom the overwhelming majority was black (Table 1).

Data for the classroom treatment component were collected through observations of 43 randomly selected classrooms from CPC's and comparison schools. The observations were made by 22 faculty and graduate assistants of the College of Education. 43 observations were made: 25 in conventional classrooms and 18 in CPC classrooms. The instrument used was a modified version of the "Classroom Observation Rating Scale" developed by Walberg and Thomas (1974). It was hypothesized that these scales would tap important processes which were intended by CPC program goals.

It was believed that the CORS was appropriate for this evaluation because the themes covered by the CORS were similar to the intended processes of the CPC program. The CORS focuses upon the following eight themes (Walberg and Thomas, 1974).

1. Instruction. This theme is characterized by a very high degree of individual instruction and interaction. This is intended by the

reduced class size of the CPC and the presence of a teacher aide.

2. Provisioning. A wealth and diversity of manipulative materials and books are evident, not just a set for the entire class. Children move freely about the room, chat and assist one another.

3. Diagnosis and 4. Evaluation. The teacher's involvement as an observer. The CPC program employs a highly structured basic skills program which allows students to work at their own pace while simultaneously allowing for immediate feedback and evaluation. The program does not see structured learning experiences as being opposed to individualized, child-centered learning.

5. Humaneness. The teacher's use of pupil's work and materials. This theme reflects again the CPC's emphasis on improving the richness of the environment as well as on valuing the child as a person.

6. Seeking. The teacher seeks community resources, receives assistance from and exchanges insights with colleagues and other resource persons. This theme reflects the CPC's concern for community, especially parent, involvement.

7. Self-perception. The teacher's self-view is of an adaptable, sensitive, feeling, continual learner who is comfortable with children taking the initiative and who trusts their ability to learn in a framework not centered on the teacher.

8. Assumptions. The teacher sees knowledge as a personal synthesis that cannot be "transmitted."

In an effort to delineate separate processes of the CPC program, Four scales were composed a priori from the CORS. The scales were: 1) enriched environment 2) child-centeredness, 3) parent involvement (six items composed specifically for the CPC study which were substituted for original CORS items), and 4) presence of evaluation of student

achievement. See Appendix A.

Also parent involvement in the school program was assessed by using parent self-reports from parent interviews given to a random sample of treatment and comparison group parents.

A Theoretical Model for the CPC. The CPC model (Figure 1) for improving academic achievement assumes that criterion performance of students on achievement tests is affected by the following variables:

--Parent involvement in the school program
(measured by parent self-reports and the CORS "parent involvement" scale)

--A highly structured basic skills program (measured by the CORS "evaluation" scale)

--An abundant supply of learning materials (measured by the CORS "enriched environment" scale)

--A reduced class size, which is intended to allow increased individualization and increased interaction with the teacher and teacher-aide (measured by the CORS "child-centeredness" scale)

It should be noted that the "child-centeredness" scale incorporates qualities such as humaneness and freedom, which are a vague intention of stated CPC objectives and, it is assumed, are intended to increase with a lowered teacher-pupil ratio. If these qualities were found to be negatively associated with CPC treatment, the "child-centeredness" scale would be a check on unintended outcomes of the program (Cronbach, 1963; Talmage and Rasher, 1980).

This model is similar to the "Model of Classroom Processes" (Cooley and Lohnes, 1976) insofar as it focuses upon classroom processes (Figure 2), but it is unique in that it includes and emphasizes the efficacy of parent involvement in affecting home environment and student

achievement. Because of this, the model crosses units of analysis--the classroom and the home (via parent involvement in the school program). Therefore, measures of classroom processes and parent involvement must be included in the treatment verification study and the outcome measures should include achievement and home environment. "Improved nutrition and health care" is a component which was included in CPC objectives, but it was not quantitatively measured in this study because it was not clearly stated how the CPC program of nutrition and health care is an improvement over that of regular public schools.

Statistical Procedures. In designing a plan for statistical analysis of the data, it was necessary to refer to the goals of the study and the CPC model. The first goal was: to verify that CPC treatment is significantly different from conventional treatment. This study examined two aspects of treatment--classroom processes and parent involvement in the school program.

1. Classroom processes. The "Classroom Observation Rating Scale" (Walberg and Thomas, 1974) was used to assess classroom treatment. Four scales were delineated a priori from the CORS: 1) enriched environment; 2) child-centeredness; 3) parent involvement; and 4) presence of evaluation of student achievement. See Appendix A. Measures of differences in classroom environment were obtained using discriminant analysis.

The purpose of discriminant analysis is to classify phenomena according to how well their characteristics fit the clearly specified characteristics of a phenomenon of interest. Theoretically, CPC's should differ from regular classrooms on the four a priori scales, with CPC's scoring higher on all four.

The discriminant analysis showed that two scales of the CORS

discriminated with statistical significance--"the presence of evaluation of student activities" ($p<.03$); and "child-centeredness" ($p<.05$). The CORS did not discriminate between groups on "enriched environment" ($p<.15$) or on "parent involvement" ($p<.35$). See Table 2.

Another finding was that group means of CPX classrooms were higher than those of CPC classrooms on all four scales and that the group means of CPC classrooms were higher than those of regular classrooms on all four scales (Table 3). This indicates that all findings are in the hypothesized direction and that CPX treatment would appear even more intensive than CPC treatment. The percent of "grouped" cases correctly classified was 58%.

After completing this analysis, the authors realized that they also wanted to know how well the scales discriminated between regular classrooms and CPC/CPX classrooms combined. Therefore, another discriminant analysis was conducted with two treatment groups, regular (coded 1) and CPC/CPX (coded 2). In this analysis the "presence of evaluation of student activities" scale was significant at the .007 level and the "child-centeredness" scale was significant at .04 with the remaining two scales being non-significant again. With two groups the percentage of "grouped" cases correctly classified was 77%. Discrimination improved on all scales.

Since it was noticed that the scales comprised of items from the original Walberg and Thomas instrument were highly correlated with each other and uncorrelated with the "parent involvement" scale, it was decided to test how well the total of those items would predict combined CPC/CPX vs. comparison group membership. To do this, treatment was regressed on the total of the original CORS items, deleting the six "parent involvement" items. This resulted in a beta of .38 for the CPC

group ($p<.001$). The CORS items predicted group membership with statistical significance. In addition the residual plot shows that the residual distribution is relatively unbiased and efficient.

Finally a factor analysis was done which yielded fundamentally the same information as did the discriminant analysis. There was one principal factor on which "evaluation," "child-centeredness," and "enriched environment" loaded heavily, and on which "parent involvement" was weak.

2. Parent involvement. In further assessing parent involvement, a random sample of CPC and comparison group parents were asked the following two questions:

1. How often do you come to (name of school or CPC)?
   A. Almost every day
   B. Often (a few times each week)
   C. Sometimes (about once each week)
   D. Once or twice each month
   E. Seldom or never

2. Are you a member of a School Advisory Council, Parent Council, P.T.A., or other school-related organization?
   A. Yes
   B. No

Question 1. was coded 1 to 5 as frequency of attendance increased and was named "attendance." Question 2 was coded: yes=1, no=0; and was named 'organization membership." Correlation coefficients were obtained for both scales and treatment (Table 4). From the table, it can be seen that CPC treatment is positively and significantly correlated with

attendance and organization membership.

To increase precision in the estimate of the contribution of CPC treatment to increased attendance, a multiple regression analysis of covariance was done regressing CPC treatment on attendance controlling for organization membership. CPC treatment retained a significant ($p<.05$) predictor.

The second goal of the study was to verify that CPC treatment is being implemented as intended. This analysis made a logical comparison of intended program processes as represented in the CPC program model (Figure 1) with the results of the statistical analyses which represent the actual processes which were observed. An analysis was done to determine the congruence between intended and observed processes (Stake, 1967). Figure 3 shows that CPC classes and parents scored higher on all intended processes, but that only the "child-centeredness" and "evaluation" scales showed statistically significant differences.

The third goal of this study was to provide information which supports or fails to support the hypothesis that program outcomes are due to differences in program treatments. It was not possible to complete this analysis for this paper, but to test this hypothesis, an additional regression analysis will be conducted which first regresses achievement on a dummy variable representing CPC vs. comparison group exposure with the effects of pre-treatment achievement held constant. Following this initial analysis, those treatment verification measures significantly differentiating the CPC's from the comparison group will be added to the equation. It is hypothesized that with the treatment verification scales in the equation the dummy variable representing treatment will become non-significant. Such a finding would support the hypothesis that differences in the classroom experiences of CPC vs.

comparison groups account for a majority of the treatment effect (Pascarella and Terenzini, 1980).

A few words should be said about internal validity. Are we accurately measuring what we intend to measure? As an observational study, the CPC research has the advantage of studying naturally-occurring, well-established programs. This factor provides a theoretical basis for ruling out "Hawthorne effects" since the CPC treatments are no longer viewed as fresh and experimental. As a single population observational study with a well-defined, homogeneous population, the CPC study does not concern itself with random assignment; rather it must be concerned with methods of selection to ensure internal validity. Since the entire population of five and 8-year-olds was chosen for the study and random selection was employed in selecting parents and classrooms, internal validity should be high.

SIGNIFICANCE

Regarding the evaluation needs of compensatory education programs requiring parent involvement, Ira J. Gordon, who was a leading expert on parent involvement in compensatory education, emphasized the need for verification of treatment when he said: "The Parent Education Follow Through Model has influenced parents, children, schools, school systems, and communities. Unfortunately, information such as that presented here has been overlooked in policymaking at the federal level. In our opinion, if federal guidelines require parental involvement, the evaluation of the implementation of guidelines should be required" (Gordon, 1979). If such evaluations are to be effective, appropriate methodology must be improved and applied.

A number of evaluations of the educational effects of the Chicago CPC's have been conducted (Stenner, 1974; Eash and Rasher, 1976; Fuerst, 1977). These evaluations share a number of weaknesses common to studies of compensatory education programs, specifically:

--They have been cross-sectional, one-shot studies which lacked meaningful measures of prior student achievement (Stenner had longitudinal data but did not control for prior achievement in estimating treatment effects).

--They have lacked comparison groups, relying instead on comparisons with national norms. without control groups it has bee difficult to attribute effects unambiguously to the CPC experience.

--They have analyzed achievement outcomes almost exclusively, neglecting other important components of learning such as home environment and locus of control.

--They have generally failed to document the nature of or the degree of implementation of CPC treatment versus conventional treatment.

This research intends to address these weaknesses by using comparison groups, by using multiple measures to verify treatment, by making use of prior achievement data to make causal attributions, and by employing appropriate statistical procedures.

There is a continuing need for evaluative data to inform the practice of and to guide funding in compensatory education programs having parent involvement. As an established and ongoing program emphasizing parent involvement in compensatory education, the Chicago Child Parent Center program is an appropriate subject for this research. The treatments of CPC's as well as the effects need to be assessed if

educational contributions from this large investment of time, capital, and human energy are to be extended to a larger population.

References

Anderson, .M., Evertson, C.M., Brophy, J.E. An Experimental study of effective teaching in first-grade reading groups. The Elementary School Journal, 1979, 79 (4), 193-223.

Brophy, J.E. Teacher behavior and its effects. Journal of Educational Psychology, 1979, 71, 733-750.

Campbell, D.T., and Stanley, J.C. Experimental and quasi-experimental designs for research. Chicago: Rand McNally & Co., 1963.

Chicago Board of Education, Illinois. Department of Government Funded Programs. ESEA Title I, child parent centers, 1972-1973, final evaluation report. Arlington, Virginia: IBEX, Inc., 1975.

Chicago Board of Education, Illinois. Department of Government Funded Programs. ESEA Title I, early childhood education 1973-1974, final evaluation report. Arlington, Virginia: IBEX, Inc., 1975.

Chicago Board of Education, Illinois. Department of Government Funded Programs. ESEA Title I, early childhood education 1974-1975, final evaluation report. Durham, North Carolina: IBEX, Inc., 1976.

Chicago Board of Education, Illinois. Final evaluation of 1975-1976 ESEA Title I child-parent centers. Chicago: Author, 1977.

Chicago Board of Education, Illinois. Department of Government Funded Programs. Adaption-expansion of the ESEA Title I child-parent centers activity. Chicago: Author, 1978.

Chicago Board of Education, Illinois. Department of Government Funded Programs. Adaption of ESEA Title I child parent centers activity: extension of age cycles 7 & 8 in six selected parent schools. Chicago: Author, 1978.

Child-Parent Educational Centers, Project I, Activity I, Elementary-Secondary Education Act. Washington: Public Law 89-10, Title I, 1967.

Cooley, W.W. Explanatory observational studies. Educational Researcher, 7 (9), 1978, 9-15.

Cooley, W.W.. & Lohnes, P.R. Evaluation Research in Education. New York: John Wiley & Sons, 1976.

Crandall, V.C., Katkovsky, W., and Crandall, V.J. Children's beliefs in their own control of reinforcement in intellectual-academic achievement situations. Child Development, 1965, 36, 91-109.

Cronbach, L.J. Course improvement through evaluation. In B.R. Worthen and J.R. Sanders (Eds.), Educational Evaluation: Theory and practice. Belmont, California:

Wadsworth Publishing Co., 1973.

CTB/McGraw-Hill. Comprehensive Tests of Basic Skills, Level A, Form S, Expanded Edition. Monterey, California: CTB/McGraw-Hill, 1973.

Dolan, L. The affective consequences of home support, instructional quality and achievement. Urban Education, 1978, 13, 323-344.

Eash, M.J. and Rasher, S.P. Longitudinal evaluation of Child Parent Centers. Unpublished manuscript, University of Illinois at Chicago Circle, 1976.

Eash, M.J., Haertel, G., Pascarella, E., Conrad, K., Iverson B., Vispoel, W. Assessment of multiple outcomes: An evaluation research study of a compensatory early childhood program. Paper presented at the Annual Meeting of the American Educational Research Association, Boston, Mass., 1980.

Fuerst, J.S. Child parent centers: An evaluation. Integrated Education, 1977, 15, 17-20.

Gordon, I.J., Olmsted, P.P., Rubin, R.I., and True, J.H. How has Follow Through promoted parent involvement? Young Children, 34, 5, 1979.

Haney, Walt. The Follow Through planned variation experiment volume V: A technical history of the national Follow Through evaluation. Cambridge, MA: The Huron Institute, 1977.

House, E.R., Glass, G.V., McLean, L.D., Walker, D.F. No simple answer: Critique of the Follow Through evaluation. Harvard Educational Review, 1978, 48, 128-160.

Kennedy, M.M. Findings from the Follow Through planned variation study. Educational Researcher, 1978, 7, 3-11.

Leinhardt, G. Modeling and measuring educational treatment in evaluation. Review of Educational Research, 1980, 50 (3), 393-420.

Leonard, W.H. and Lowery, L.F. Was there really an experiment? A quantitative procedure for verifying treatments in educational research. Educational Researcher, 1979, 8, 4-7.

Lindquist, E.F., Hieronymus, A.N., Hoover, H.D., Peterson, J., Whitney, M., Lewis, T., Neckere, E., Strayer, F., Fry, M., Monroe, V., Humphrey, K., Billington, R., and Cohen, A. Iowa Tests of Basic Skills. Boston: Houghton Mifflin, Company, 1972.

Pascarella, E. and Terenzini, P. Student-faculty and student-peer relationships as mediators of the structural effects of undergraduate residence arrangement. Paper presented at the Forum of the Association for Institutional Research, Atlanta: April, 1980.

Provus, Malcolm. Evaluation of ongoing programs in the public school system. NSSE 68th Yearbook, Part II, 1969, 242-283.

Rosenshine, B.V. and Furst, N. The use of direct observation to study teaching. The Second Handbook of Research on Teaching. Edited by R. Travers. Chicago, Illinois: Rand McNally, 1973.

Schwab, J.J. The practical: A language for curriculum. School Review, 1969, 78, 1-23.

Scriven, M. The methodology of evaluation. In R.E. Stake (Ed.) Curriculum evaluated, American Educational Research Association monograph series on evaluation, no. 1, Chicago: Rand McNally, 1967.

Stake, R.E. The countenance of educational evaluation. Teachers College Record, 1967, 68, 523-540.

Stenner, A.J. and Mueller, S.G. A successful compensatory education model. Phi Delta Kappan, 1973, 55, 246-248.

Talmage, H. and Rasher, S.P. Unanticipated outcomes: Perils to curriculum goals. Phi Delta Kappan, 1980, 62:1, 30-32; 71.

Walberg, H.J., and Thomas, S.C. Open education: An operational definition and validation in Great Britain and United States. American Educational Research Journal, 9 (2), 1972, 197-208.

Walberg, H.J. and Thomas, S.C. Defining open education. Journal of Research and Development in Education, 8, 1974, 4-13.

Westinghouse Learning Corporation/Ohio University. The impact of Head Start: An evaluation of the effects of Head Start on children's cognitive and affective development. Washington, D.C.: Office of Economic Opportunity, 1969.

Wittrock, M.C. The evaluation of instruction: Cause-and-effect relations in naturalistic data. In M.C. Wittrock and D.E. Wiley (Eds.), Evaluation of instruction: Issues and problems. New York: Holt, Rinehart and Winston, 1970.

Wold, H. Causal inference from observational data: A review of ends and means. In M.C. Wittrock and D.E. Wiley (Eds.), The evaluation of instruction: Issues and problems. New York: Holt, Rinehart and Winston, 1970.

Table 1

Student Racial Composition and Percentage of Students from Low Income Homes for Schools Included in the Evaluation of Child Parent Centers

	Percent Black[a]	Percent Low Income[b]
A. Sponsor school with CPC	99	83.27
B. Sponsor school with CPC	74	66.76
C. Sponsor school with CPC	99	54.07
D. Sponsor school with CPC	99	60.26
E. Comparison school	100	72.01
F. Comparison school	100	66.47

[a]Demographic data from Selected School Characteristics 1973/74 - 1977/78; Prepared by the Department of Administration.

[b]Percentage of students from Low Income Homes. The percentage indicated is based on the information in the Annual Full Enrollment and Housing Report. The data are determined by federal census data and the percent from low income families as reported by the State of Illinois.

Table 2

Statistical Significance of the Discriminating Ability of the Four A Priori Scales of the CORS

SCALE	SIGNIFICANCE ($p <$)
Enriched Environment	.16
Child-centeredness	.05
Parent Involvement	.35
Evaluation of Student Activities	.03

Table 3

Group means of Regular, CPC, and CPX Classrooms on the Four A Priori Scales of the CORS

SCALE	Regular Mean (N=25)	CPC Mean (N=13)	CPX Mean (N=5)
Enriched Environment	27.6	29.2	32.4
Child-centeredness	41.9	45.5	51.2
Parent Involvement	7	8.2	8.6
Evaluation of Student Activities	14.2	18.0	19.6

Table 4

Correlation Coefficients and Significance
Levels of CPC Membership, Attendance, and Organization Membership

	CPC Membership	Attendance
Attendance	.30 $p < .009$ N=78	
Organization Membership	.22 $p < .05$ N=83	.41 $p < .0002$ N=78

Figure 3

A Logical Analysis of Congruence between CPC Intents and the Findings of the Treatment Verification Study

INTENTS	OBSERVATIONS
Reduced class size which should foster increased individualization and increased interaction with teacher and teacher-aide (measured by the "child-centeredness" scale)	CPC classes scored significantly higher on the "child-centeredness" scale ($p<.05$)
Highly structured basic skills program (measured by the "evaluation" scale)	CPC classes scored significantly higher on the "evaluation" scale ($p<.03$)
Provisioning for abundant materials (measured by the "enriched environment" scale)	CPC classes scored higher on the "enriched environment" scale ($p<.15$)
Parent involvement (measured by the "parent involvement" scale and parent self-reports of "attendance" and "organization membership")	CPC classes scored higher on the "parent involvement" scale ($p<.35$). CPC parents reported higher "attendance" ($p<.009$) and "organization membership" ($p<.05$). CPC parents remained significantly higher on "attendance" ($p<.05$) when "organization membership" was used as a covariate.

APPENDIX--A

A list of the items in the a priori scales taken from the "Classroom Observation Rating Scale" (Walberg and Thomas, 1974); and the "parent involvement" scale constructed specifically for the CPC Study. Uncoded items were not included in the four a priori scales.

Scale codes:

EN="enriched environment"
CC="child-centeredness"
EV="evaluation"
PI="parent involvement"
(R)=Rating scale value is reversed
(e.g. a value of "4" is scored as "1")

OBSERVATION-RATING SCALE

		no evidence	weak infrequent	moderate occasional	strong frequent evidence
EN	1. Texts and materials are supplied in class sets so that all children may have their own.	1	2	3	4
EN	2. Each child has a space for his/her personal storage and the major part of the classroom is organized for common use.	1	2	3	4
EN (R)	3. Materials are kept out of the way until they are distributed or used under the teacher's direction.	1	2	3	4
EN	4. Many different activities go on simultaneously.	1	2	3	4
CC (R)	5. Children are expected to do their own work without getting help from other children.	1	2	3	4
PI	6. There are parents present in the classroom.	1	2	3	4
EN	7. Manipulative materials are supplied in great diversity and range, with little replication.	1	2	3	4
CC	8. Day is divided into large blocks of time within which children, with the teacher's help, determine their own routine.	1	2	3	4
CC	9. Children work individually and in small groups at various activities.	1	2	3	4
EN	10. Books are supplied in diversity and profusion (including reference, children's literature).	1	2	3	4
CC	11. Children are not supposed to move about the room without asking permission.	1	2	3	4

			no evidence	weak infrequent	moderate occasional	strong freguent evidence
	12.	Desks are arranged so that every child can see the blackboard or teacher from his/her desk.	1	2	3	4
EN	13.	The environment includes materials developed by the teacher.	1	2	3	4
PI	14.	Parents are working with small groups of children.	1	2	3	4
	15.	The program includes use of the neighborhood.	1	2	3	4
EN	16.	Children use "books" written by their classmates as part of their reading and reference materials.	1	2	3	4
CC (R)	17.	Teacher prefers that children not talk when they are supposed to be working.	1	2	3	4
CC	18.	Children voluntarily group and regroup themselves.	1	2	3	4
EN	19.	The environment includes materials developed or supplied by the children.	1	2	3	4
CC (R)	20.	Teacher plans and schedules the children's activities through the day.	1	2	3	4
PI	21.	The environment includes materials developed or supplied by parents.	1	2	3	4
CC (R)	22.	Teacher makes sure children use materials only as instructed.	1	2	3	4
CC	23.	Teacher groups children for lessons directed at specific needs.	1	2	3	4
CC	24.	Children work directly with manipulative materials.	1	2	3	4

			no evidence	weak infrequent	moderate occasional	strong frequent evidence
EN	25.	Materials are readily accessible to children.	1	2	3	4
PI	26.	The environment includes materials for parents to read and/or use.	1	2	3	4
	27.	Teacher promotes a purposeful atmosphere by expecting and enabling children to use time productively and to value their work and learning.	1	2	3	4
EV	28.	Teacher uses test results to group children for reading and/or math.	1	2	3	4
CC (R)	29.	Children expect the teacher to correct all their work.	1	2	3	4
CC	30.	Teacher bases instruction on each individual child and his/her interaction with materials and equipment.	1	2	3	4
EV	31.	Teacher gives children tests to find out what they know.	1	2	3	4
	32.	The emotional climate is warm and accepting.	1	2	3	4
	33.	The work children do is divided into subject matter areas.	1	2	3	4
PI	34.	The teacher works cooperatively with parents in the room.	1	2	3	4
CC (R)	35.	The teacher's lessons and assignments are given to the class as a whole.	1	2	3	4
CC (R)	36.	Teacher bases instruction on textbooks for the grade level he/she teaches.	1	2	3	4
	37.	Teacher has children for a period of just one year.	1	2	3	4

			no evidence	weak infrequent	moderate occasional	strong frequent evidence
	38.	The class operates within clear guidelines made explicit.	1	2	3	4
CC	39.	Teacher takes care of dealing with conflicts and disruptive behavior without involving the group.	1	2	3	4
EN	40.	Children's activities, products, and ideas are reflected abundantly about the classroom.	1	2	3	4
CC (R)	41.	The teacher is in charge.	1	2	3	4
EV	42.	Before suggesting any extension or redirection of activity, teacher gives diagnostic attention to the particular child and his/her particular activity.	1	2	3	4
CC	43.	The children spontaneously look at and discuss each other's work.	1	2	3	4
EV	44.	Teacher uses tests to evaluate children and rate them in comparison to their peers.	1	2	3	4
CC	45.	Teacher uses the assistance of someone in a supportive, advisory capacity.	1	2	3	4
CC (R)	46.	Teacher tries to keep all children within his/her sight in order to make sure they are doing what they are supposed to do.	1	2	3	4
EV	47.	Teacher keeps a collection of each child's work for use in evaluating his/her development.	1	2	3	4
EV	48.	Teacher views evaluation as information to guide instruction and provisioning for the classroom.	1	2	3	4
CC (R)	49.	Academic achievement is the teacher's top priority for the children.	1	2	3	4
CC	50.	Children are deeply involved in what they are doing.	1	2	3	4

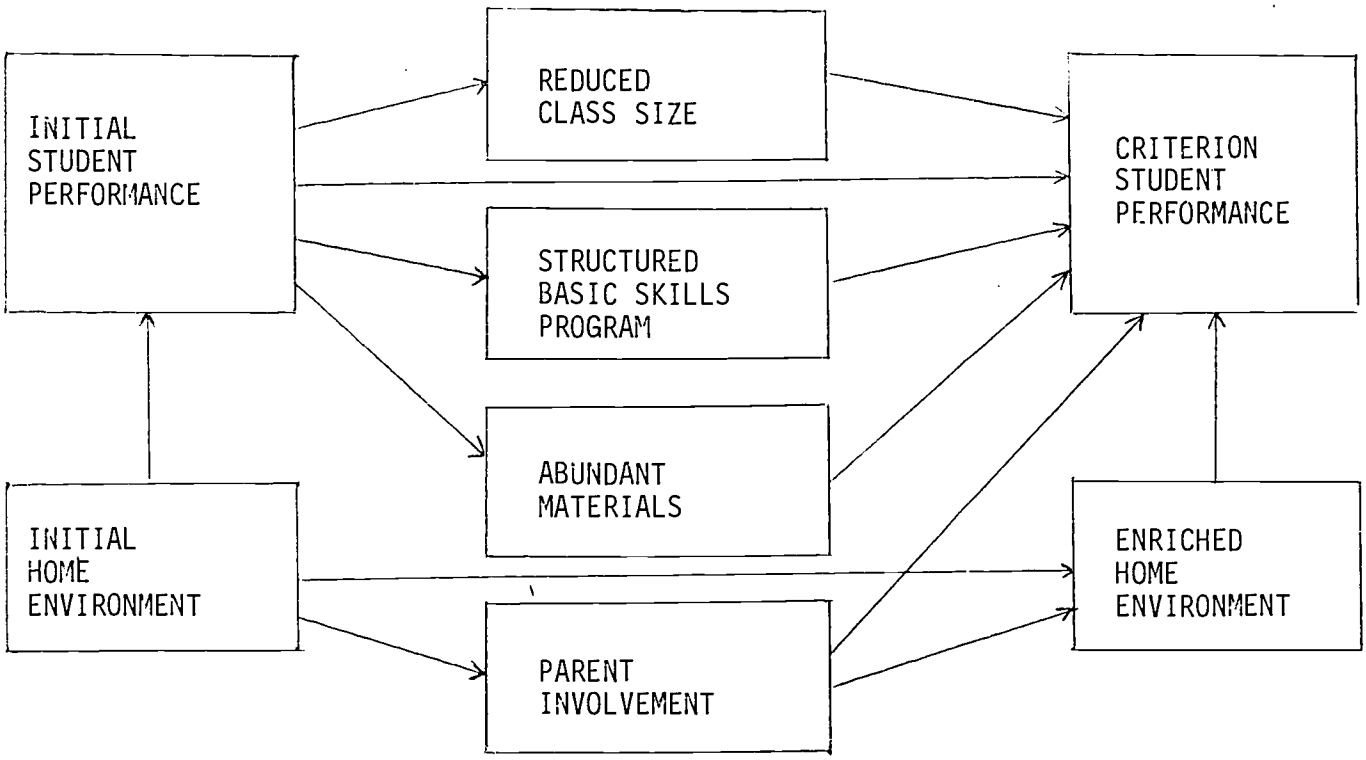

Figure 1: A Theoretical Model for the CPC.

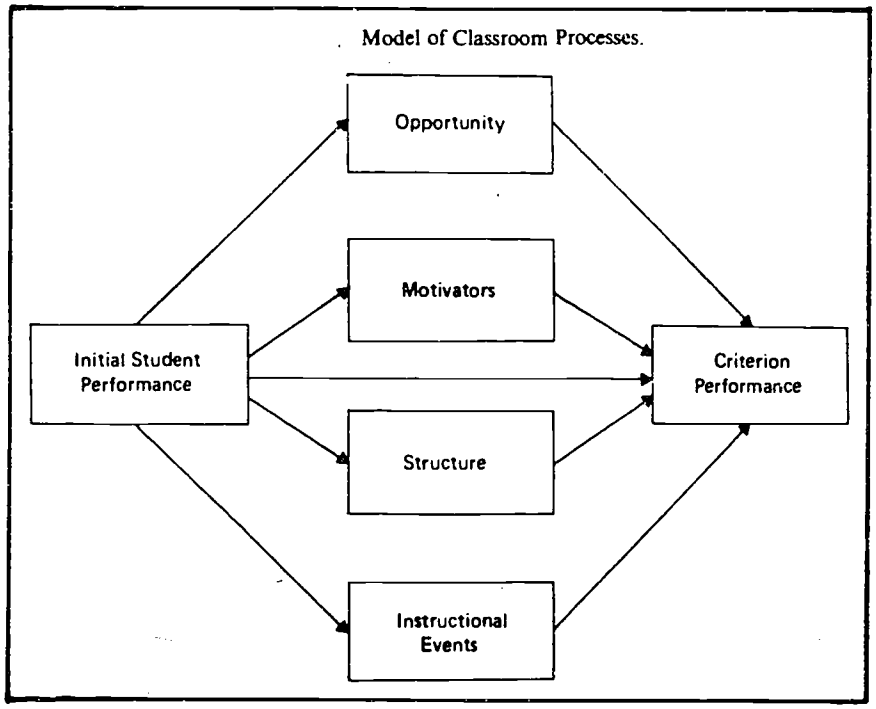

Figure 2: Model of Classroom Processes.