DOCUMENT RESUME

ED 081 474 PS 006 709

AUTHOR	Biber, Barbara; Franklin, Margery B.
TITLE	Issues in the Relation of Psychology to Childhood Education.
PUB DATE	31 Mar 73
NOTE	19p.; Paper presented at the biennial meeting of the Society for Research in Child Development (Philadelphia, Pa., March 31, 1973)
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Affective Behavior; *Cognitive Development; *Early Childhood Education; Educational Innovation; *Educational Theories; Formative Evaluation; *Psychology; Summative Evaluation; Teacher Role

ABSTRACT

Issues concerned with the widespread application of psychological theory and research to childhood education are discussed. Educational programs based on behavioral and cognitive psychological theories are compared in terms of the values they communicate to children. The innovative early childhood programs of the 60's which focused on reducing learning deficits are reviewed. A new educational focus is proposed, based on the interaction of cognitive and affective aspects of psychological functioning. Finally, the effect of involvement in education on the field of psychology is discussed. The need for better methods of analyzing total school environments and the inadequacies of the present methods of evaluation are emphasized. It is argued that formative (process-oriented) evaluation rather than summative (outcome-oriented) evaluation is desirable. (DP)

Issues in the Relation of Psychology to Childhood Education*

Barbara Biber, Bank Street College of Education
Margery B. Franklin, Sarah Lawrence College

In this paper, we are concerned with issues that confront us, as psychologists and educators, in this period of accelerated application of psychological theory and research to childhood education. We shall consider the place of psychological formulations in new and older innovative programs, and some of the challenges to be met in application and evaluation.

At the outset, we may state our view that every educational innovation rests on certain assumptions--implicit or explicit--about the nature of development and relates to underlying values concerning the aims of education. As Kohlberg and Mayer (1972) and others have argued, the relationship between psychology theory assumptions, educational goals and the implementation of goals in practice is complex.[1] Many of the choices made in constructing this network and in articulating pathways within it are necessarily value choices.

Child psychology, as an academic discipline, has had a long and varied relationship to education. In the early years, psychologists assumed that they had a responsibility to applied fields and that what they had to say was relevant. At some point during this early period, there was a shift: Some child developmentalists continued a direct involvement with applied fields, but many--perhaps in search of their identity as "pure scientists"--gathered in the groves of academe. Research burgeoned, but questions concerning the relation to education failed to grasp the imagination. And then--in the last ten or fifteen years --large numbers of psychologists (among them some of the most prestigious members

*Paper presented at the meetings of the Society for Research in Child Development, Philadelphia, Pa., March 31, 1973.

1. See, for example, Scriven, 1972; and Hawkins, 1972.

of our profession) have again ventured forth to become involved in applied fields, particularly in the area of childhood education. In part, this was due to a re-awakened sense of social responsibility, a concern with the plight of the growing and increasingly vociferous "other America." No doubt, too, the new availability of government funding for education-related projects had a significant impact.

Many of the vast numbers of innovative programs in education now on the scene evidence the direct impact of interest and effort on the part of psychologists. While some programs consist of a mixed bag of instructional techniques deriving from an assortment of theoretical precepts, others are based (more or less rigorously) on theory-specific concepts about the course of intellectual growth, and--related--appropriate methods of education. The diversity of programs reflects the influence of differing and opposing psychological viewpoints--and they therefore, as we shall try to show, involve the children in qualitatively different encounters with people, problems and ideas.

In the programs of Planned Variations in Head Start and in the Follow Through Models we have an extraordinary opportunity to observe the linkage of theory, goal, implementation and underlying values in programs that are closely allied with opposing psychological theories (Maccoby, 1970; Fein and Clarke-Stewart, 1973). However, one cannot expect programs in action to be pure exemplars of theoretical positions. Psychological theory as such cannot delineate specific educational procedures and quality of implementation is bound to vary.

One group of programs is built on behavioristic models. Here, the aim is to change the <u>performance</u> of the child in specific areas of activity. One starts with where the child is, behaviorally. He may be diagnosed as "language deficient," for instance, because he speaks little, has a small vocabulary, or does not use standard English sentence structure. One instructional method (Bereiter

and Engelmann, 1966), geared toward improving language usage and so-called concept formation, uses a fast-paced question and answer interchange. The teacher and child have distinct, fixed roles: the teacher initiates and stimulates loudly articulated repetitions of the correct response. The child's range of acceptable involvement is restricted to attending, selecting, and repeating the correct response individually and in unison. In initial stages, material reinforcement--such as tokens or candy--may be supplied by the teacher to signal the difference of right from wrong and to keep the child motivated.

Punishment techniques, employed in earlier versions of these programs were dropped in line with theoretical considerations; incorrect responses and unacceptable behavior are simply ignored. The absence of praise has been used as a controlling technique where the teacher, noticing an inattentive child, gives emphatic praise to another child who is paying attention. Where tokens are used as reward, these become the coin of the realm and can be exchanged for what are regarded as privileged activities such as playing with favorite toys. In one program, the child must have earned more tokens for access to a toy than to a book. Tokens may also be used to buy the right to indulge temporarily in undesirable behavior (Bushell, 1973). Similarly, techniques have been used to shape socially acceptable behavior, such as saying "Good morning, Miss X."

What messages, with broad value implications, are being communicated to the children? To know the correct answer is the highest good; the path to competence (and presumably to feelings of self-worth) is a straight line to the teacher who has the knowledge to dispense and the means to validate "correctness." Where all goes according to plan, the teacher can be perceived as a harmless enjoyable game-player, a means for finding gratification in mastery of "skills" or socially acceptable behavior. But is it not true--particularly for some children--that the teacher is also the person who can place one in a praiseless limbo to cope

and interpret alone, an adult who cannot be counted on to be interested in distress signals or loss of control? And doesn't the microcosm, the classroom--and therefore, perhaps, the world--become a place for barter, where anything can be bought? Being nice to people also becomes part of an exchange system.

Programs that are based on cognitive-developmental theory are set apart from those based on behavioristic learning theory by their common assumptions about the nature of development and learning, the role of the child in the learning experience and the related instructional strategies (Kohlberg, 1968). And to pursue our theme--the values transmitted implicitly to the children, the fundamental images of people and the world, are antithetical to those imparted, willy-nilly, in behavioristic programs of the type described.

In cognitive-oriented programs (built on Piaget's formulations), the goal is to nurture underlying cognitive processes that are the foundation for mastering new skills under differing circumstances and that enter into the achievement of increasingly complex modes for organizing experience. Thus, the focus of these curricula is gradual mastery of concepts such as classification, number, causality, time and space--at a level where they can serve as tools for dealing with differing specific contents under varying circumstances (Kamii, 1972; Lavatelli, 1970).

In line with the precepts of cognitive-developmental theory, the learning environment is structured to offer opportunities to the child to engage in experimental, exploratory activities with concrete materials and in relation to ideational problems; to express ideas, to raise questions and to resolve the cognitive conflicts that arise in the process of active exploration and new discovery. The materials offered the child for play and the structured learning tasks utilized by the teacher are planned specifically with respect to assessment of the stage of the child's cognitive operations, the availability of

constructs and operations to deal with what is offered successively and the readiness to move on to a next level of cognitive functioning.

Inside and outside the frame of structured lesson plans, the teacher establishes a mode of interchange to support the growth process. Much of the verbalization is conversational, but neither probing nor evaluating. It may take the form of putting the child's actions into words or calling out a reciprocal response from the child--or it may serve a stimulating function: raising questions that arouse wonder or bring into focus some instance of a conceptual problem that requires resolution. The ongoing cycle of challenge and satisfaction in intellectual mastery provides the source of motivation.

What messages, again with what value implications, are being communicated to children here? If all goes well, the child will become competent--he will value and enjoy the thinking processes as a means through which experience can be organized, questions raised, and problem-solutions sought. The teacher is a guide and a helper in this complex endeavor, but the child is the major actor in his learning environment, actively selecting rather than passively accepting, initiating rather than responding. He is a problem-solver, a questioner, an explorer. Presumably, he will internalize these modes as part of his image of himself. And the teacher here values the children's exchange of experience with each other--not only to the end of strengthening language as an instrument for thought, but because experience is deepened, perspective gained, in the process of communicative interchange among peers as well as between children and adults. This, then, is not a rigidly stratified community of stronger and weaker; knowing and unknowing; adult and child. Instead, it is a social system in which people--teachers and children--are engaged in various kinds of interchange, some fluid, some highly structured; but always processed so that the child's involvement may be basically autonomous and the powers thus gained yield a sense of his

own individual strength.

Thus, the innovative programs initiated by psychologists in the early sixties varied widely, but all were focused on reducing or eliminating the so-called deficit in intellectual functioning that--at that time--was taken as characteristic of the group of children called "disadvantaged." For some, the intellectual deficit was conceptualized in terms of lack of "tool subjects" (Beretier and Engelmann, 1966), for others as a lack of information about the world (Deutsch, 1967), for others as deficiency in abstract conceptualization (Blank, in press). Some saw such deficits as linked to disturbances in the emotional sphere (Mattick and Murphy, 1971). Both social perspectives and psychological theorizing determine what are seen as salient behavioral phenomena and shape the specification and interpretation of the problem.[2] We can see this very clearly in the deficit-difference controversy and the recent reinterpretation of some children's problems in school (Cole and Bruner, 1972).

By and large, these innovative programs do not comprise planned comprehensive educational programs. They are target-oriented. To the extent that one agrees with the importance of the target, one can say that a given program might well function as a significant component in a comprehensively planned program. But they are <u>parts</u> grafted onto a complex <u>system</u> in which other parts are often outside the purview of the psychologist program developer or are viewed as unimportant in relation to the stated aim, e.g., in programs where play is regarded as child's entertainment and, as such, not as an important activity if one is

---

2. Even where there is superficial agreement about a "target" problem, for instance, improving "abstract conceptualization," different theoretical perspectives offer divergent interpretations of its nature and origin, and prescribe methods of remediation accordingly. Thus, if one assumes that "abstract conceptualization" depends on verbal mediation, one can become absorbed in teaching children to respond verbally, as in labelling objects and pictures correctly.

concerned with improving academic performance as manifested in elevated I.Q. and achievement scores.

If a target goal is sufficiently defined, the basis of judging the effects of the program vis-a-vis the target are usually evident--at least where the goal has been conceptualized in terms of readily observable behavior. But what of the ramifications or side effects in other spheres? The particular technique adopted to achieve a given goal in one sphere may very well, must almost inevitably, affect developmental processes in other spheres, positively or negatively (Biber, 1967).

As an illustration of how recognition of this principle by a teacher works positively, we cite a particular instance. The teacher was aware that the children were somewhat confused about multiple roles so, while reading a story about firemen, she asked, "Is the fireman a daddy?" The children answered "No." The teacher did not correct them but waited, confidently, for the child whose father was a fireman to enlighten the others--which the child did. The teacher's prime focus or target was in the cognitive domain--mastery of concepts of multiple roles--but her <u>way</u> of handling the interchange intentionally served another prime goal at the same time: namely, to help children establish mutually supporting relationships and to see each other, as well as the teacher, as sources of information (Biber, Shapiro, and Wickens, 1971).

Alternatively, restricted attention to a target goal may have negative outcomes. The child who brings his drawing of a scene in which a boy stands tall beside a miniature house is presenting a complex of meanings to be perceived. The distortion of size is one; the projection of the feeling of wished for strength by exaggerating size is another. The teacher who responds by pointing out the disparity of the size relation and suggests that the child draw a picture of the way it <u>really</u> is, is violating one of the essential processes by

which children achieve a strong sense of self--namely, to have their creative products accepted and recognized as the end of an integrative process in which they, as individuals, find symbolic ways of dealing with both the logical and alogical aspects of their experience.

It follows that the possible merit of a technique needs to be considered and weighed in terms of multiple possible effects--those intended, those additional effects to be expected on a theoretical basis and, finally, those recognized post hoc.

Recently, there is a new awareness that a major innovative movement--progressive education--was, in an earlier era, also addressed to the correction of social faults and similarly convinced that to change education is a way to compensate for society's errors (Squire, 1972). It differed basically from contemporary innovative programs. First, it recognized educational programs as total ideologies and therefore was explicit about the goals that pertained to schools as institutions as well as the development and socialization of children as individuals. Second, it had and still has in its inheritors a very different relation to psychology.

In this view, traditional education was failing the needs and potential of a democratic society. What was needed instead was a totally different life of learning for children, one that would counter school-induced conformist tendencies, release freedom of feeling and elevate thinking processes to more independent judging and problem-solving modes--while at the same time promoting productive group experience.

New instructional strategies and curricula were developed by educators in accord with Dewey's theories of experiential learning. The active learning child was the center of interest and attention. Over the years, this educational ideology was developed and refined through the insights gained by school people in

active interchange with children. However, these educators sought a basic rationale for their practices in psychological theory. Programs showed their debt to Dewey first of all; the influence of Gestalt theory and Freudian conceptualizations was also evident. In recent years, there has been increasing affiliation with developmental stage concepts and ego psychology formulations (Biber and Franklin, 1967).

Existing programs that represent this ideology have different histories. Some, like the Bank Street program, have been developing over more than half a century. Some, like the Education Development Center, are young and represent the formulations and practices of the British Infant School movement (Plowden, 1967). Open classroom programs, now being tried in many of our public schools, differ greatly one from the other, but most give evidence of the effort to incorporate important aspects of this approach in their practices (Rathbone, 1972). Among these programs there are differences in the specifics of the curricula, not only in content and degree of structure but also in the specific nature of the teacher role. Nevertheless, they can be identified, to different degrees, with certain principles of child development and learning. A psychological rationale for this philosophy of education has recently been formulated as a developmental-interaction approach to education (Shapiro and Biber, 1972).

In this view, cognitive and affective aspects of psychological functioning are inextricably interwoven. The conceptualization of sequential stages draws on both cognitive and psychodynamic theory to characterize qualitative shifts in thinking processes, ego-development and conflict resolution.

This position is the basis of several Head Start and Follow Through programs in which the efforts to increase language facility and abstract conceptualization are part of a comprehensive educational program including interest in the

emotional aspects of the child's experience as well as his intellectual competence and his growing sense of himself as a learner.

Ideally, in these classrooms, as in the cognitively-oriented programs, children are actively engaged in exploring their environment and sharing their experience, in an atmosphere where questioning, searching and a problem-solving approach are encouraged and there is no embarrassment about not-knowing, among children or between children and teachers. Here, more systematically than in the more recently-developed cognitive programs, the instructional method emphasizes the use of the children's varied, ongoing experience in the classroom as the prime material for stimulating cognitive processes. The teacher uses every appropriate opportunity to encourage differentiated observation and comparison, the search for causes and origins and the organization of experience in terms of continuity and transformation. Thinking becomes part of continuous experiencing, in the same stream with doing, feeling, reasoning and imagining.

The teacher is expected to be responsive to the feeling and thought processes of the children as individuals and to enact a teaching role that balances support and challenge in accord with their need and potential. To do this, she needs to be able to assess not only the patterns of the child's cognitive functioning but also to be aware of how, for example, he manages the ambivalent wish for independence or the giving and taking of things or of acts of love or hate or the frustration that comes from misperception of his own powers. She is looked to by the children as a willing and capable resource for meeting the problems of confusion, fear, loss of direction, anger or loneliness with sympathy where there is hurt and a sense of justice where there is controversy.

Expressive activities are an essential part of the curriculum. The child is provided a variety of materials for expressing his experience in verbal and non-verbal modes, free from the restraints of imposed standards of duplicating

objective reality or adhering consistently to the relations implicit in logical organization. These teachers see the dramatic play of young children, for example, as an opportunity to blend the personal and the impersonal, the subjective and the objective, the intuitive and the logical--the creative process in which the child integrates his understanding of objective reality with his personal meanings and feelings. In later years, this process may change in content and vehicle, but it is valued as the best promise that thinking will be vitalized and generative.

In this society, a child can find strength and pleasure from the way he discovers increasing cognitive coherence, from sharing depth of feeling with teachers and children and from re-creating symbolically the meanings--real or fantasied--that are of greatest moment to him at this stage of life.

The theoretical unreality and the educational faults inherent in programs or conceptual formulations that neglect the interdependence of cognition and affect have been asserted by many psychologists and educators for many years. It is a matter of some surprise, therefore, that psychologists concerned about the special problem of disorder in the cognitive sphere should have paid so little attention to affective processes. It is a matter of much more surprise and great discouragement to read in the Ford Foundation's self-critical report on its Comprehensive School Improvement Program the following: "it is fair to say that the program reflected the times (the early 1960s) and did not address itself directly to the emotional and attitudinal development of pupils--that set of human relations factors sometimes termed the 'affective domain.' Most of those who worry and study about education were barely aware of that realm as we were spinning out of the 1950s, the decade of the 'pursuit of excellence'" (Ford Foundation, 1972). Perhaps now that we have a mea culpa from the Ford Foundation, this basic concept about development and education will come upon better

times.

What do we see as feedback from the psychologists' involvement in education? For many this is a period of "second thoughts" fed from several sources.

We are familiar with theoretical formulations that argue against the concept of a value-free science of psychology. It seems fair to say that the psychologists' direct involvement in education, their direct contact with the qualitatively different child societies that develop out of different psychological theories will add strength to that position.

In recent critiques of what has been lacking in past studies, we see increased awareness of the complexity of dealing with the varied, interdependent processes of classroom life (Sigel, 1972; Soar and Soar, 1972; Messick and Barrows, 1972). Shapiro (1973) says, "The parameters of variation cannot be simply boxed in with notations of geography and ethnicity. Nevertheless, one finds few, if any, descriptive or analytic accounts of the educational transactions that take place in the schools or centers under study." Reviews of the literature point to a dearth of studies dealing with the components of classroom situations. The plea, in Shulman's words, is that the language of education and the behavioral sciences develop "a set of terms for describing environments that is as articulated, specific and functional as those already possessed for characterizing individuals" (Shulman, 1970).

One effort to do this appears in the study on the impact of school experience by Minuchin and others (Minuchin, Biber, Shapiro, and Zimiles, 1969) which provided full descriptions of four qualitatively different school environments. What we see now is increased attention to the need for developing methods of analyzing learning environments, taking the total complexity into account before initiating specific innovative practices.

The outcomes of innovative programs developed by psychologists have been

measured systematically. When outcomes are not in accord with expectations--as has been the case for many preschool and elementary school projects--various post hoc interpretations are offered.

It has been said that program differences do not come through because teachers did not know how to implement the method, or did not understand the rationale behind it, or--even more seriously--effective use of the method required basic changes in the teacher's attitudes and perception of children and the learning process. In some comparative studies, the quality of teacher functioning and commitment loom large, emerging as more salient than differences in instructional method per se (Weikart, 1969). Sometimes the underlying theoretical rationale is questioned or even indicted in the process of interpreting findings--for example, where one developmental process was considered in isolation without sufficient attention given to questions of interaction. Still another kind of post hoc inference points to the importance of long periods of continuous implementation prior to final assessment of outcomes. This last was one of the prime factors in the establishment of Follow Through as a sequel to Head Start.

When one embarks on reconsideration of "causes" or independent variables, one also becomes involved in evaluating the evaluation or outcome-measurement process. Recently, there has been considerable criticism of the more standard evaluation techniques (Bissell, 1973; Shapiro, 1973; Fein and Clarke-Stewart, 1973; Eisner, 1972). While it is not entirely accurate to attribute this newer line of thinking to feedback from the phenomenon of psychologists plunging into the applied field of education, it undoubtedly had great impetus from the need to face the reality of what looks like failure in many applied programs. Conceivably, the concept and method of evaluation may be obscuring much of what is really happening and, if it is, we have reason to be uncertain where the failure is--how much in the program and how much in the way of evaluating it. Zimiles

(1970) points to the negative influence of inadequate assessment: "When the shortcomings of the evaluations themselves are glossed over and they are mistakenly presented as offering definitive statements regarding the nature of school influence, and the imperfect indices they use to achieve crude assessment themselves become the basis for school planning, then it is time to recognize that they have overstepped their bounds and begun to interfere with the very processes they were intended to support."

Several of the psychologists who have been close to the task of evaluating compensatory programs in early childhood share a common concern. In their view, the test procedures used to evaluate outcomes of programs are inadequate and often misleading. Such methods sample a very narrow range of a program's effects and are therefore best suited to the programs with the most limited goals. The nature of the test situation itself restricts and distorts the extent to which the child's responses are representative of his capabilities in other situations, especially for the disadvantaged child.

Especially with regard to cognition, assessment strategies have been geared toward evaluating knowledge or capacities and have rarely provided sensitive indices of cognitive functioning. While the distinction between capacity per se and its functional significance have been noted for some time, this has not been given prime emphasis in the design of research. Recently, social concerns, developments in cognitive psychology and a new perspective in cross-cultural study have coalesced in the analysis of the relations between extent of cognitive repertoire and variations in modes of utilization (cf. Cole, Gay, Glick, and Sharp, 1971).

Evaluation would take a quite different perspective if the criterion of optimal cognitive functioning were not so restrictedly defined as the attainment of the highest levels of logical thinking. Alternatively, one turns to Werner's

conceptualization of optimal functioning which does not posit displacement of earlier by later, or of primitive by more advanced modes of thinking (Werner, 1957). Instead the movement from lesser to greater maturity is characterized by widening the range of developmentally different operations and thus making available different modes of structuring to be brought into play in any given situation.

Perhaps we have come to the point where it is time to reject the all too persistent emphasis on acceleration and replace it with attention to extent of repertoire in both a functional and developmental context.

There are clear implications for education as well as evaluation. Cole and Bruner (1972) suggest "the teacher should stop laboring under the impression that he must create new intellectual structures. He should start concentrating on how to get the child to transfer skills he already possesses to the task at hand..." To us, it would be preferable to say that the emphasis on abilities per se should give way to helping the child utilize all the modes of structuring his experience that he has achieved developmentally to serve a more varied range of pragmatic and creative ends.

These trends support process-oriented evaluation that does not assess outcome at some arbitrary endpoint but engages in intimate study of programs, documenting what is happening to children in the learning environment where there can be a full sampling of how the child is using his capacities in interaction with what a particular environment offers him. It has been called formative in distinction to summative evaluation (Scriven, 1966).

In closing, we may look at these questions in terms of the persons involved --to consider psychologists in relation to educators. Is the psychologist in a position to provide guidelines for educational directions in the light of the divergent, often opposing viewpoints in his own field, and the vast body of

research yielding conflicting implications? Clearly, psychologists cannot claim simply to be translating a stable body of theory and fact into practice. Rather, we should recognize that in every case we are taking a particular theoretical position that is tied to a view of man's relation to his world and that has specific value implications vis-a-vis education.

The psychologist entering the world of education defines the terms of the exchange and has great influence in shaping educational practice. The relationship is of "experts" to "practitioners." As in other fields, expertise in a circumscribed area is too often taken--both by the expert and the recipient--as expertise at large. This can lead to serious problems--as in the precipitous initiation of curricular plans which may be sound in the abstract but have not been designed with sufficient understanding of children in classrooms. On the other hand, if practitioners are to use the contributions of psychologists, they should be responsible in becoming more knowledgeable and critical than may are--which involves growth in tolerance for ambiguity and uncertainty, a rejection of the "easy solution"--and the packaged kit which is its material embodiment. Recognition of all these complexities should give us a heightened perspective. It should not lessen our commitment.

References

Bereiter, C. & Engelmann, S. Teaching disadvantaged children in the preschool. Englewood Cliffs, N.J.: Prentice-Hall, 1966.

Biber, B. A learning-teaching paradigm integrating intellectual and affective processes. In E. M. Bower & W. G. Hollister (Eds.), Behavioral science frontiers in education. New York: Wiley, 1967.

Biber, B. & Franklin, M. B. The relevance of developmental and psychodynamic concepts to the education of the preschool child. Journal of the American Academy of Child Psychiatry, January 1967, VI, 1.

Biber, B., Shapiro, E., & Wickens, D. Promoting cognitive growth: a developmental-interaction point of view. Washington, D.C.: National Association for the Education of Young Children, 1971.

Bissell, J. S. Planned variation in Head Start and Follow Through. In J. Stanley (Ed.), Preschool programs for the disadvantaged, Vol. II. Baltimore, Md.: Johns Hopkins University Press, 1973.

Blank, M. A methodology for fostering abstract thinking in deprived children. Bulletin of the Ontario Institute for Studies in Education. In press.

Bushell, D., Jr. The behavior analysis classroom. In B. Spodek (Ed.), Early childhood education. Englewood Cliffs, N.J.: Prentice-Hall, 1973.

Cole, M., Gay, J., Glick, J. A., & Sharp, D. W. The cultural context of learning and thinking. New York: Basic Books, 1971.

Cole, M. & Bruner, J. S. Preliminaries to a theory of cultural differences. In I. J. Gordon (Ed.), Early childhood education. The Seventy-first Yearbook of the National Society for the Study of Education, Part II. Chicago: University of Chicago Press, 1972.

Deutsch, M. & Associates. The disadvantaged child. New York: Basic Books, 1967.

Eisner, E. W. Emerging models for educational evaluation. School Review, August 1972.

Fein, G. G. & Clarke-Stewart, A. Day care in context. New York: John Wiley & Sons, 1973.

Ford Foundation. A Foundation goes to school. New York: The Ford Foundation, 1972.

Hawkins, D. Human nature and the scope of education. In L. G. Thomas (Ed.), Philosophical redirection of educational research. The Seventy-first Yearbook of the National Society for the Study of Education, Part I. Chicago: University of Chicago Press, 1972.

Kamii, C. An application of Piaget's theory to the conceptualization of a preschool curriculum. In R. K. Parker (Ed.), The preschool in action. Boston: Allyn and Bacon, Inc., 1972.

Kohlberg, L. Early education: a cognitive-developmental view. Child Development, December 1968, 39.

Kohlberg, L. & Mayer, R. Development as the aim of education. Harvard Educational Review, November 1972, 42, 4.

Lavatelli, C. S. Piaget's theory applied to an early childhood curriculum. Boston, Mass.: American Science and Engineering, Inc., 1970.

Maccoby, E. E. & Zellner, M. Experiments in primary education: aspects of Project Follow Through. New York: Harcourt Brace Jovanovich, Inc., 1970.

Mattick, I. & Murphy, L. B. Cognitive disturbances of young children. In J. Hellmuth (Ed.), Cognitive studies, Vol. 2, deficits in cognition. New York: Brunner/Mazel, 1971.

Messick, S. & Barrows, T. S. Strategies for research and evaluation. In I. J. Gordon (Ed.), Early childhood education. The Seventy-first Yearbook of the National Society for the Study of Education, Part II. Chicago: University of Chicago Press, 1972.

Minuchin, P., Biber, B., Shapiro, E., & Zimiles, H. The psychological impact of school experience. New York: Basic Books, 1969.

Plowden, B. Children and their primary schools. A report of the Central Advisory Council for Education (England). London: Her Majesty's Stationery Office, 1967.

Rathbone, C. H. Examining the open education classroom. The School Review, August 1972, 80, 4.

Scriven, M. The methodology of evaluation. Publication #110 of the Social Science Education Consortium. Lafayette, Ind.: Purdue University, 1966 (mimeo).

Scriven, M. Objectivity and subjectivity in educational research. In L. G. Thomas (Ed.), Philosophical redirection of educational research. The Seventy-first Yearbook of the National Society for the Study of Education, Part I. Chicago: University of Chicago Press, 1972.

Shapiro, E. Educational evaluation: rethinking the criteria of competence. School Review, August 1973.

Shapiro, E. & Biber, B. The education of young children: a developmental-interaction approach. Teachers College Record, September 1972, 74, 1.

Shulman, L. S. Reconstruction of educational research. Review of Educational Research, 1970, 40, 3, 371-396.

Sigel, I. E. Developmental theory and preschool education: issues, problems and implications. In I. J. Gordon (Ed.), Early childhood education. The Seventy-first Yearbook of the National Society for the Study of Education, Part II. Chicago: University of Chicago Press, 1972.

Soar, R. S. & Soar, R. M. An empirical analysis of selected Follow Through programs: an example of a process approach to evaluation. In I. J. Gordon (Ed.), Early childhood education. The Seventy-first Yearbook of the National Society for the Study of Education, Part II. Chicago: University of Chicago Press, 1972.

Squire, J. R. (Ed.). A new look at progressive education. Association for Supervision and Curriculum Development, 1972 Yearbook. Washington, D.C.: Association for Supervision and Curriculum Development, 1972.

Weikart, D. A comparative study of three preschool curricula. Paper presented at biennial meeting of the Society for Research in Child Development, Santa Monica, California, March 1969.

Werner, H. The concept of development from a comparative and organismic point of view. In D. B. Harris (Ed.), The concept of development. Minneapolis: University of Minnesota Press, 1957.

Zimiles, H. Has evaluation failed compensatory education? In J. Hellmuth (Ed.), Disadvantaged Child Vol. 3 Compensatory Education: A National Debate. New York: Brunner/Mazel, 1970.