Aspects of Piaget's Theory That Have Implications for Teacher Education

Karl Openshaw and Celai E. Stendler

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KARL OPENSHAW, **Research Editor**

CELIA B. STENDLER

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Dr. Stendler is professor of education, University of Illinois, Urbana, Illinois.

The past ten years have seen a tremendous upsurge of interest in the work of Piaget, due in large part to America's increasing concern, following Sputnik, with the intellective development of children. The interest has centered not so much on Piaget's early work on language, judgment, and reasoning and moral development of the child,[1,2,3] as on his research into the psychology of intelligence[4] and, with Inhelder and others, the development of logical thinking.[5,6] This is not to leave the reader with the impression that there was a gap in Piaget's productivity or that his interests took a turn in the last two decades. A glance over his very impressive bibliography[7] shows steady production and persistent interest in problems of epistemology. His main concern is and always has been with questions of how does the child acquire knowledge and what happens to mental processes during the acquisition. Unfortunately, translations of his works have been limited to a few books, and publication involves an inevitable time lag. Gradual evolution of his theory has led him to his present investigations into the relations between perception and intelligence[8] and the role of mental image in the development of cognitive structures, but reports on these investigations are not yet available in English.

Increased interest in Piaget has met with mixed reception. On the one hand, there are those who would dismiss his work as unworthy of the attention of either psychologists or professional educators because he has not tested an adequate sample and has not done carefully controlled research. But Piaget's theory is not founded on seemingly casual observations of children; research on large numbers of children has been con-

[1] Piaget. J. *The Language and Thought of the Child.* New York: Harcourt, Brace and World, 1926.
[2] Piaget, J. *Judgment and Reasoning in the Child.* New York: Harcourt, Brace and World, 1928.
[3] Piaget, J. *The Moral Judgment of the Child.* London: Kegan Paul, 1932.
[4] Piaget, J. *The Psychology of Intelligence.* New York: Harcourt, Brace and World, 1950.
[5] Inhelder, B., and Piaget, J. *The Growth of Logical Thinking From Childhood to Adolescence.* New York: Basic Books, 1958.
[6] Inhelder, B., and Piaget, J. *The Early Growth of Logic in the Child.* New York: Harper and Row, 1964.
[7] Flavell, J. *The Developmental Psychology of Jean Piaget.* Princeton, N. J.: Van Nostrand, 1963.
[8] Piaget, J. *Les Mécanismes Perceptifs.* Paris, France: Presses Univ., 1961.

ducted in Geneva, although only one report has been translated into English.[9] Nor does his clinical method permit as much freedom to the experimenter as critics would make it appear. In the clinical method, a child is presented with a task to which he makes some kind of response; what the experimenter does next depends upon that response. But over the years, Piaget has discovered the type of response that is likely to be given, and directions for administering the task take into account the possibility of alternative responses.

On the other hand, there are critics who now attribute to Piaget every innovation in American education, from the emphasis upon teaching children the structure of subject matter to team teaching. The truth of the matter is that Piaget himself stoutly maintains in his lectures that he is not a pedagogue and that he does not concern himself with applications of his theory to problems of education. He acknowledges that there are, of course, implications for the education of children in what he has written, and he hopes that those in pedagogy will concern themselves with the task of searching out these implications. This paper considers those aspects of his theory that hold the most promise for application in the classroom.

From the wealth of ideas Piaget has given us, there are three in particular that are most relevant to problems of teacher education: his concept of intelligence, his concept of the properties of logical thought, and his concept of stages in the development of logical thinking.

Piaget's Concept of Intelligence

For Piaget, intelligence is a form of adaptation, a particular instance of biological adaptation[10] involving a striving for equilibrium in mental organization.

As an individual acts upon his environment, certain elements from the experience are stored in mental structures. Construction of mental structures begins at birth, with new elements from fresh experiences being incorporated into those structures. These new elements upset equilibrium, but as old structures are altered according to the reality conditions being experienced at the time, equilibrium is restored. Piaget postulates twin processes—assimilation and accommodation—as being at work here, with assimilation the process by which information is taken into mental structures, and accommodation the modification of the thought patterns to adapt to reality. The reader of this paper may have brought to his reading a mental structure of what constitutes intelligence that is quite different from the concept being presented here. If he acts upon Piaget's notion and mentally digests its elements, equilibrium in mental organization will be upset. With a modification of the old concept to accommodate the new, a changed concept of what is intelligence emerges.

Self-activity is crucial in the adaptive process; for Piaget, "Penser, c'est opérer." If equilibrium is to be achieved at a higher level, then the child must be mentally active; *he* must transform the data. The elements to be incorporated may be present in an experience or the child may be *told* of the error in his thinking, but unless his mind is actively engaged in wrestling with data, no accommodation occurs. Children, like adults, are not convinced by being told they are wrong, nor by merely seeing evidence that contradicts their thinking. They have to act upon the data and transform them, and in so doing, make their own discoveries. As Piaget puts it, knowledge is not a copy of reality; to know something is to modify external reality.[11] Knowledge always involves a mental operation which permits one to transform what one sees in the light of what one already knows. These operations are not the same at all ages; the thought of the young child and that of the adult are, hopefully, very different. Piaget describes the changes that occur with age in terms of stages; before turning to a description of the stages, it is necessary first to examine the properties of logical thought.

The Properties of Logical Thought

Piaget's model of logical thought is a logicomathematical one. He sees the same properties in thought structures that have been identified in algebraic structures. What do we do when we think logically? We perform some mental action upon data; we shift data about in our minds, performing displacements upon them. We put two and two together, figuratively speaking, to arrive at a conclusion. Or, we arrange things in some kind of order—perhaps a temporal one—thinking of which event happened first, which next, and so on, so that we may think about a problem in a more systematic way. Or, someone makes a sweeping analogy in the course of conversation, comparing race relations in the South and in the North. The mind then does a one-to-one correspondence between elements in each racial

[9] Inhelder, B., and Piaget, J. *The Early Growth of Logic in the Child, op. cit.*

[10] Piaget, J. *The Origins of Intelligence in Children.* New York: International Universities Press, 1952.

[11] Ripple, R., and Rockcastle, V. *Piaget Rediscovered.* A Report of the Conference on Cognitive Studies and Curriculum Development, March 1964. Ithaca, N. Y.: School of Education, Cornell University.

situation in an attempt to see whether or not they are identical. Or, the problem comes up of what is responsible for an increase in language problems among children entering kindergarten. Not only must we check out certain obvious variables to see if each is a contributing factor, but we must also check to make sure that the less obvious is not a factor. We must ask ourselves how we know it isn't such-and-such a thing. All of these are examples of operations performed upon data to arrive at consistent, noncontradictory—that is to say, logical—conclusions.

Piaget has systematically analyzed logical operations and described for us a grouplike structure that mirrors the thought of the child. The structure is not the same for children of all ages. During some of the elementary school years (7 to 12), certain mental operations are apparent in the child's thinking, operations which together form an ensemble or group.

One of the operations, reversibility, is for Piaget one of the most critical to develop. Every change, every displacement that we carry on mentally is reversible. We can combine robins and all-birds-not-robins to make up a class of birds, and we can also separate the class into the original subclasses.

Several of the tasks developed by Piaget to discover how the child thinks about a problem involve the conservation principle. An illustration of the conservation principle is the fact that such properties of matter as amount of substance, weight, and volume are conserved even with a transformation in appearance. Thus a ball of clay rolled into a hot-dog shape will contain the same amount of substance and weigh the same as it did to begin with. How do we know? Logically, it has to be the same, for the rolling-out process can be reversed and the hot dog restored to the ball. This is exactly how the child solves the problem; he uses a reversible mental operation.

Logical operations, however, form a group like structure, and reversibility is not an isolated phenomenon. Present the conservation of weight problem to a nine-year-old, and his answer may go something like this: "They've got to weigh the same. The hot dog is longer, but it's skinnier, and that makes up for its being longer. Just put it back into a ball, and you'll see that it's the same." In other words, in shuffling the data about, not only is a reversible operation performed, but the child also sees that the hot dog is made of bits and pieces of clay (additive composition) that can be put together in various ways without a change in weight. The first is the operation of additive composition, and the second is the associative operation: the mind can reach the same goal by different paths. A change in one dimension can be compensated for by change in another.

Or, one can think about the clay-ball problem in still a different way. A child may say, "It's got to be the same. You didn't add anything, and you didn't take anything away, so there can't be a weight difference." Here the operation is one of identity.

What the child is doing here as he works on the problem is actually to perform one or more operations in his mind. He may reverse a process, or combine elements to make a whole, or put elements together in different ways, or perform an identity operation where two sets *must* be the same if there is a one-to-one correspondence between parts and all the parts are accounted for. To these four properties of logical thought—reversibility, additive composition, associativity, and identity—there is added a fifth, a case of special identities or tautology, which affirms the equivalence of members of a class. A class of red objects is still a class of red objects when more red objects are added. To call a spade a spade, figuratively speaking, means that we haven't changed the class with additions we make, provided the additions are identical in quality.

When a child is presented with one of the Piaget tasks, an analysis of his responses is made for evidence that his thinking is distinguished by these properties of logical thinking. Thus in the volumes by Piaget[12,13] and those written with Inhelder[14,15] we can find the gradual emergence of logical operations as the child matures. The most thorough and best analysis of the logic involved in the practical operations characteristic of seven-to-twelve-year-olds is to be found in Flavell's *The Developmental Psychology of Jean Piaget*,[16] Chapter 5.

The operations described above characterize the child's thinking during most of the elementary school years, but during adolescence, changes occur in modes of thinking. Piaget describes the thought processes that emerge at this time as *propositional thinking*. The adolescent states propositions in terms of the variables he has identified and then proceeds systematically to combine the propositions so as to test all possible combinations.

There are four ways in which propositions can be combined. We can combine by conjunction,

[12] Piaget, J. *The Origins of Intelligence in Children, op. cit.*

[13] Piaget, J. *Logic and Psychology*. New York: Basic Books, 1957.

[14] Inhelder, B., and Piaget, J. *The Growth of Logical Thinking from Childhood to Adolescence, op. cit.*

[15] Inhelder, B., and Piaget, J. *The Early Growth of Logic in the Child, op. cit.*

[16] Flavell, J. *The Developmental Psychology of Jean Piaget, op. cit.*

as when we say, "It's got to be this *and* this"; by disjunction, "It's got to be this *or* this"; by negation, "It's neither this nor this"; and by implication, "If it's this, then this will be true." In addition to combining propositions in these four different ways, we can also transform each of the combinations in four different ways, yielding a possibility of sixteen different products.

Stages in Development of Logical Intelligence

From the foregoing analysis of logical thinking, it should be obvious that human beings are not capable of such thought processes at birth. For Piaget, they develop in stages; he regards *logical* thinking as the greatest attribute of man, and his account of stages in the development of mental operations is geared toward the individual's growth in ability to think in this fashion. There are four main stages: the sensory-motor, the preoperational, the stage of concrete operations, and the stage of formal operations.

Piaget finds the origins of logical intelligence in the sensory-motor period.[17] The infant comes into the world with two kinds of reflexes: those like the knee jerk that are not altered by experience, and others like grasping and sucking that are modified as the infant exercises them.[18] The modification occurs through assimilation and accommodation. The infant, for example, accommodates the grasping reflex to the shape of the object to be grasped, curving the fingers in one way for a long, narrow object, and in a different way for a plastic play ring. Later, looking and grasping become coordinated; the infant can put out his hand and grasp that which he sees. Each newly discovered experience brings with it a need to repeat the experience; activity begets activity. And as the infant operates upon the physical world with his sensory-motor system, he acquires notions of objects, space, time, and causality. Ask a ten-month-old baby, "Where's Mommy?" and he looks toward the door through which Mommy has just disappeared; he "thinks" about the concepts of time and objects with his motor system, i.e., Mommy was here but is not now. However, she still exists. Objects have a permanence and do not cease to exist when out of sight.

During the sensory-motor period, the infant lays the foundation for later representational thought. Structures are built which are essential for the mental operations carried on at a later stage of development. The sensory-motor foundation of one structure that adults recognize most easily is that involved in orienting ourselves in space. A person giving directions to a motorist will often turn his body and put out his hands as he "thinks" with his motor system which way to direct the questioner. With a mental map, the need for a motor acompaniment to thinking disappears; thought has become representational. But the structures which enable the school child to deal with space are laid in the sensory-motor period. The concept of a grid system, of an object being displaced in both horizontal and vertical direction, has its primitive beginnings in infant actions.

Gradually actions become internalized; the child can represent in thought processes that which was first developed on the sensory-motor system. This second stage begins at eighteen months and extends to seven years of age (roughly). It is in this stage that we find most kindergarten and first-grade children; some second-grade; and of course, some children even older than seven years. This stage is called preoperational because the child does not use logical operations in his thinking. Piaget[19] characterizes mental processes at the preoperational stage as follows:

1. The child is perceptually oriented; he makes judgments in terms of how things *look* to him. Piaget has shown that perceptual judgment enters into the child's thinking about space, time, number, and causality. It is only as the child goes beyond his perceptions to perform displacements upon the data in his mind that conservation appears.

2. The child centers on one variable only, and usually the variable that stands out visually; he lacks the ability to coordinate variables.

3. The child has difficulty in realizing that an object can possess more than one property, and that multiplicative classifications are possible. The operation of combining elements to form a whole and then seeing a part in relation to the whole has not yet developed, and so hierarchical relationships cannot be mastered.

So far this consideration of preoperational thinking has been largely negative. We have seen that the child lacks the ability to combine parts into a whole, to put parts together in different ways, and to reverse processes. What, then, can the child do? The development of logical processes is not at a standstill during this period, and there are some positive accomplishments. We see, for example, the rudiments of classification; the child can make collections of things on

[17] Piaget, J. *The Origin of Intelligence in Children, op. cit.*

[18] Wolff, P. H. "The Developmental Psychologies of Jean Piaget and Psychoanalysis." *Psychological Issues* 2, No. 1, Monograph 5, 1960.

[19] Piaget, J. *The Psychology of Intelligence, op. cit.*

the basis of some criterion. He can also shift that criterion. Thus, if we present a kindergarten child with a collection of pink and blue squares and circles, some large and some small, and ask him to sort them into two piles with those in each pile being alike in some way, he can usually make two different collections on the basis of color and shape (a few children discover the third criterion of size). Such an ability, of course, is essential to the formation of classes and eventually to the notion of hierachy of classes.

The child is also beginning to arrange things in a series. He can compare two members of a set within a series when they are in consecutive order; he knows that Tuesday comes after Monday. But since Friday comes after Tuesday, which is after Monday, does Friday also come after Monday? This operation, involving seeing logical relations between things or events that are arranged in a series, is not yet possible to the preoperational child, but experiences with seriation are preparatory to the development of such operations.

By seven years of age, the logical operations of reversibility, associativity, etc., that I have already described begin to appear. Piaget calls this the stage of concrete operations, because while the child uses logical operations, the content of his thinking is concrete rather than abstract. Fifth-grade pupils, if given a billiard-game problem when they are studying light, can do serial ordering and establish a one-to-one correspondence between the two slopes of directions. "The more I put it like that (inclined to the right), the more the ball will go like that," a ten-year-old will explain. That the total angle can be divided into two equal angles does not occur to them, for they lack the formal operations necessary to such a discovery. They solve problems and give explanations in terms of the concrete data available to them; they do not try to state generalizations.

This stage of concrete operations lasts until twelve years, which is roughly the age for the onset of the state of *formal* operations or propositional thinking. According to Piaget, most children at the high school level tend to do the if-this-happens-then-that-is-likely-to-happen (or not happen) kind of thinking. They are also more likely to think in terms of abstractions and can state, as in the case of the the billiard game, the general principle involved.

Critics of Piaget have made this notion of development as occurring in stages one of their targets. Some mistakenly think that he uses the concept, as did Gesell, to refer to similarities among children of the same chronological age, with age being the critical antecedent of the similarities. As Kessen[20] points out, when the language of stages is used merely as a paraphrase for age variation, it is not useful. For Piaget, however, stages are convenient for helping us to think coherently about the course of development. His descriptions of stages are based upon changes in the child's comprehension of logic and emphasize sequence. They are not tied in any hard-and-fast way to age. In fact, as the students in Geneva discovered when they tried the Piaget tests on husbands, wives, or other adults, including themselves, adults are spotty in their logical development. Most adults have reached the stage of formal thought in solving many of the problems demanding logical solutions, but they may be a bit chagrined to discover that they are not even at the stage of concrete operations with respect to others. And with respect to operations at each of the stages, Piaget describes these in terms of probability; he would say that at a particular stage there is a probability which can be set at a certain figure that the child will select a particular strategy (not necessarily consciously) for solving a problem. Piaget[21] explains the stage-age relationship in this fashion:

> The age of seven is a relative one in a double sense. In our research we say that a problem is solved by children of a certain age when three-quarters of the children of this age respond correctly. As a result, to say that a question is solved at seven years old means that already one-half of the six-year-olds can solve it, and a third of the five-year-olds, etc. So, it's essentially relative to a statistical convention. Secondly, it's relative to the society in which one is working. We did our work in Geneva and the ages that I quote are the ages we found there. I know that in certain societies, for instance in Martinique, where our experiments have been done by Monique Laurendeau and Father Pinard, we have found a systematic delay of three or four years. Consequently the age at which those problems are solved is also relative to the society in question. What is important about these stages is the order of the succession. The mean chronological age is variable. (pp. 31-32)

The question arises, once we assume that age changes in logical thinking are not fixed, as to whether we can then speed up the development of logical thinking. This is a question that never fails to amuse students and faculty in Geneva, for they regard it as typically American. Tell an American that a child develops certain ways of thinking at seven, and he immediately sets about

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[20] Kessen, W., and Kuhlman, C., editors. *Thought in the Young Child.* Society for Research in Child Development, Monograph 27, No. 2. Lafayette, Indiana: Purdue University, 1962.

[21] Ripple, R., and Rockcastle, V., *op. cit.*

to try to develop those same ways of thinking at six or even five years of age. Actually investigators in other countries as well as in America have tried to accelerate the development of logical thinking, and we have available today a considerable body of research on what works and what doesn't work. Most of the research has not worked. Paper after paper report the stubborn refusal of children to accept the conservation principle, despite a variety of training techniques. Efforts have not been successful because experimenters have not paid attention to the processes of assimilation and accommodation in equilibrium theory. The researchers have tried to teach a response rather than to develop operations. They have tried, for example, to teach the child that of course the hot dog will weigh as much as the clay ball; the subject can put both on a two-pan balance and get immediate feedback. But the child is completely unconvinced unless *he* acts upon the data in his mind, transforming them by means of one or more of the operations already described. In fact, an ingenious technique devised by Smedslund[22] showed that external reinforcement leads only to a pseudo-concept. After children had been trained on the balance to give conservation responses, the experimenter tested each child by surreptitiously removing a piece of clay from the hot dog before it was put on the scale. The subjects who had learned the proper response immediately abandoned conservation in favor of perceptual judgment. Learning a fact by reinforcement does not in and of itself result in mental adaptation. Learning involves active assimilation resulting in momentary conflicts and compatibilities which the learner must himself resolve to reach a higher level of equilibrium.

What does work? Research by some investigators offers some promising leads. These might be summarized as follows:

1. It has been possible to accelerate the development of logical intelligence by inducing cognitive conflict in subjects. Smedslund[23] devised a training procedure with the balls of clay where he both elongated the clay and also took away a piece of it, thus forcing the child to choose between two conflicting explanations. Can the hot dog weigh more when a piece has been taken away? Given this kind of choice, the child veers toward consistency. The number of successful cases was small, but they offered tentative support for the cognitive-conflict hypothesis.

2. Training children to recognize that an object can belong to several different classes at once aids in the development of logical classification. Both Morf[24] and Sigel[25] have had some success with this procedure. Sigel has worked with bright, preschool children on conservation tasks, training them on certain logical operations considered to be prerequisite to conservation. Children were trained on multiple labeling, multiple classification, and multiplicative relations. For example, the teacher would first have a child label a piece of fruit, then another and another; then search for a class label; then define criteria of the class; and finally take the class apart and put it together according to various criteria. Only five children were trained, but four out of the five showed an increase in ability to deal with conservation tasks.

3. There is a tendency for conservation of number to be accelerated in children trained to see that addition and subtraction of elements change numerical value, and so, if nothing is added and nothing is taken away, number is conserved regardless of how the elements are arranged in space.

4. To help children move from the preoperational stage to the stage of concrete operations, it is helpful to make gradual transformations in the visual stimulus and to call the child's attention to the effects of a change in one dimension to a change in another.

Piaget himself has provided guidelines for acceleration of logical development in his identification of four factors that influence development from one stage to another. These factors help to explain individual differences in children's performance on the Piaget tasks:

1. *Maturation.* Maturation, defined as a ripening of neural structures with age, undoubtedly plays a part in the transformations in mental structures, and undoubtedly genes influence the ripening process. But maturation alone cannot account for changing mental structures. The Martinique studies (Pinard and Laurendeau), showing a four-year delay in development over the Geneva norms, reveal that maturation alone does not guarantee that children of a certain age will have reached a certain stage in logical development. And evidence from the Dennis[26] studies in Teheran shows

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[22] Smedslund, J. "The Acquisition of Conservation of Substance and Weight in Children." V. "Practice in Conflict Situations Without External Reinforcement." *Scandinavian Journal of Psychology* 2: 203-10; 1961.

[23] Smedslund, J. "The Acquisition of Conservation of Substance and Weight in Children." III. "Extinction of Conservation of Weight Acquired Normally and by Means of Empirical Controls on a Balance Scale." *Scandinavian Journal of Psychology* 2: 85-87; 1961.

[24] Morf, A. "Apprentissage d'une Structure Logique Concrete: Effets et Limites." *Études d'Epistémologie Génétique* 9: 15-83; 1959.

[25] Sigel, I. *The Acquisition of Conservation: A Theoretical and Empirical Analysis,* 1965. (Mimeographed.)

[26] Dennis, W. "Causes of Retardation Among Institutional Children." *Journal of Genetic Psychology* 96: 47-59; 1960.

that maturation itself is dependent upon experience. Babies in an orphange confined to cribs and terribly limited in motor experiences were shockingly retarded in age of onset of walking. Ripening of the nervous system is not something that is completely under control of the genes. A recent critical review by Moltz[27] had this to say:

> An epigenetic approach holds that all response systems are synthesized during ontogeny and that this synthesis involves the integrative influence of both intraorganic processes and extrinsic stimulative conditions. It considers gene effects to be contingent on environmental conditions and regards the genotype as capable of entering into different classes of relationships depending on the prevailing environmental context. In the epigeneticist's view, the environment is not benignly supportive, but actually implicated in determining the very structure and organization of each response system. (p. 44)

2. *Experience.* Piaget finds that experience alone is not enough to accelerate logical development, if experience is defined as exposure to objects or events only. There must be a logico-mathematical experience if logical structure is to develop. There must be a "total coordination of actions, actions of joining things together or ordering things, etc."[28]

[27] Moltz, H. "Contemporary Instinct Theory and the Fixed Action Pattern." *Psychological Review* 72: 27-47; 1965.
[28] Ripple, R. and Rockcastle, V., *op. cit.*, p. 13.

3. *Social transmission.* Social transmission is linguistic or educational transmission. Like the two preceding factors, this, too, plays a part in logical development, but it is not enough. As Piaget points out, young children hear everyday expressions involving whole-part relationship ("Champaign, Illinois"; "Some Indians lived in tepees"), but they do not understand the logic involved. Some Indians are no different for them from all Indians, and Champaign is not physically contained in Illinois. Linguistic transmission is possible only when logical structures are present in children's thinking.

4. *Equilibrium.* For Piaget, this is the critical factor. The three previously mentioned factors are necessary, but it is the mental activity of the subject when confronted with cognitive conflict and operating to compensate that determines the development of logical structures. Compensation is achieved through the operations of reversibility, etc., already described.

No attempt will be made here to spell out the implications of Piaget's theory for educators. Certainly his account of stages should be useful to curriculum makers interested not only in attending to subject matter to be mastered but also in providing for development of logical structures. And Piaget's equilibration theory should shake the faith in external reinforcements of all but the most orthodox of learning theorists. For the doubting Thomas, some experience in using external reinforcements to try to teach a child the conservation principle will prove to be shattering but rewarding.

Even if it were to evaluate its achievements in terms of the goals set forth in 1946, the NEA would not have done nearly enough. The field of education needs to practice what it preaches.

So, the next question is, "What shall we do about it?" Since your Code of Ethics already subscribes to educational opportunities for all, I am here to ask that you honor it, realizing full well that too long our educational programs have been geared to the average white child and have ignored the Negro child who is the by-product of deprived parents and apathetic citizenry. Meet this obligation head-on in the context which it deserves—not that the Negro child is inherently inferior, but that just as there are white children for whom environmental factors have taken their toll, so also, for other minority children, will there have to be devised methods and materials which can break through the iron curtain of handicaps, erected, not by them, but by a cruel and callous society, so that your tests don't even measure him.

—Whitney M. Young, Jr.
NCTEPS Conference, New York
June 25, 1965