

DOCUMENT RESUME

ED 111 180

95

FL 006 962

AUTHOR Ramirez, Manuel, III; And Others
 TITLE New Approaches to Bilingual Bicultural Education, No. 4: Field Sensitivity and Field Independence in Children.
 INSTITUTION Dissemination Center for Bilingual Bicultural Education, Austin, Tex.; Systems and Evaluation in Education, Santa Cruz, Calif.
 SPONS AGENCY Bureau of Elementary and Secondary Education (DHEW/OE), Washington, D.C. Div. of Bilingual Education.
 BUREAU NO BR-14-0448
 PUB DATE Aug 74
 GRANT OEG-9-72-0154 (280)
 NOTE 20p.
 AVAILABLE FROM Dissemination Center for Bilingual Bicultural Education, 6504 Tracor Lane, Austin, Texas 78721 (\$0.60, set of eight manuals \$5.20)

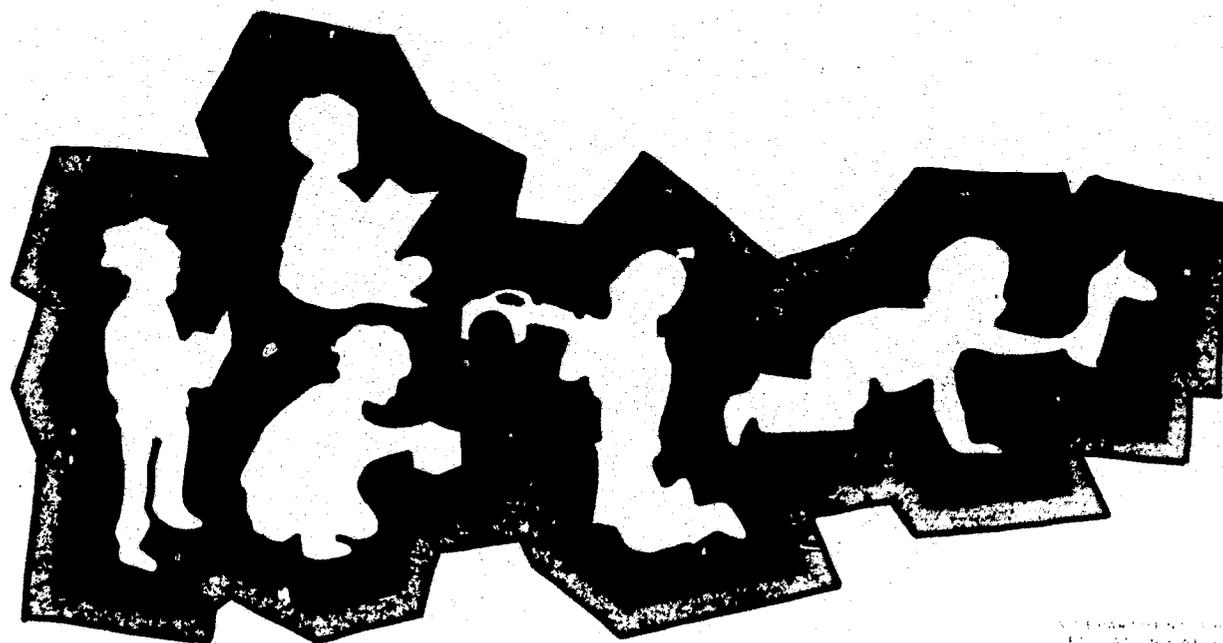
EDRS PRICE MF-\$0.76 HC-\$1.58 Plus Postage
 DESCRIPTORS Biculturalism; *Bilingual Education; Bilingualism; Bilingual Students; Bilingual Teachers; Cognitive Development; *Cognitive Measurement; *Cognitive Processes; *Cognitive Tests; Cultural Differences; Learning Characteristics; Measurement Instruments; Observation; Programed Materials; Teacher Education; *Teaching Guides; Teaching Methods

IDENTIFIERS Child Embedded Figures Test; Elementary Secondary Education Act Title VII; ESEA Title VII; Field Independence; Field Sensitivity; Portable Rod and Frame Test

ABSTRACT

This teaching manual is the fourth in a series of seven (accompanied by a manual of self-assessment units) that have been designed for use in bilingual/bicultural programs. The components of the series may be used either individually or together. This manual is intended to familiarize teachers with ways of measuring cognitive styles in children. The teacher's objective is to determine whether a particular child is field sensitive, field independent, or "bicognitive." Two techniques of measuring cognitive style in children, the Portable Rod and Frame Test and the Child Embedded Figures Test, are described, along with their shortcomings. The major part of the manual describes how teachers can determine cognitive styles by observing children in the school setting, with the aid of "Child Rating Forms." These observations are used in assigning children to one of three instructional groups, and a different teaching strategy is used with each group. (Author/AM)

NEW APPROACHES TO BILINGUAL, BICULTURAL EDUCATION



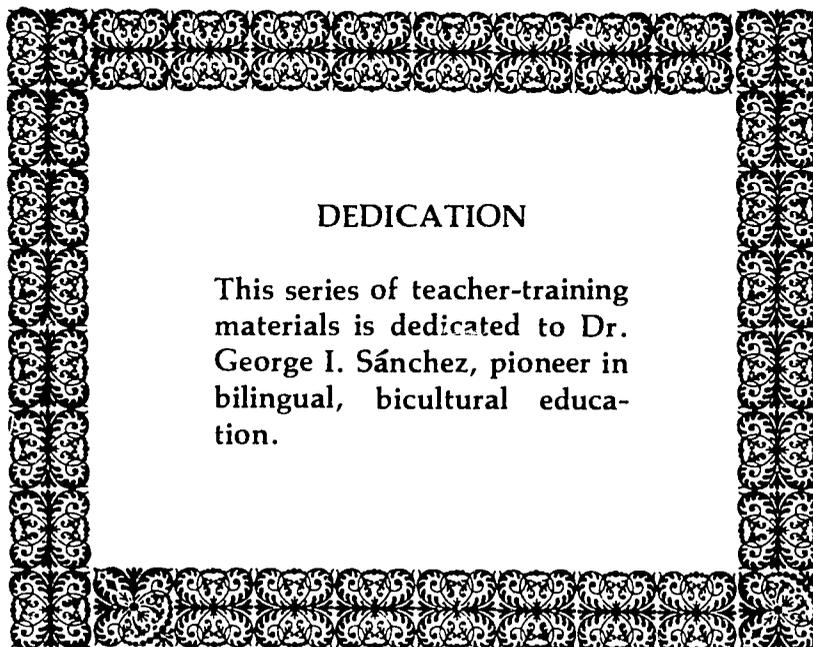
2

Field Sensitivity
and Field Independence
in Children

1011160

ERIC

F006962



DEDICATION

This series of teacher-training materials is dedicated to Dr. George I. Sánchez, pioneer in bilingual, bicultural education.

Field Sensitivity and Field Independence in Children

MANUEL RAMIREZ III, Ph.D
University of California, Santa Cruz

P. LESLIE HEROLD, Ph.D
California State College, San Bernardino

ALFREDO CASTAÑEDA, Ph.D
Stanford University

Published and distributed by

THE DISSEMINATION CENTER FOR BILINGUAL BICULTURAL EDUCATION
AUSTIN, TEXAS

AUGUST 1974

Alfredo Castañeda, Ph.D.
Manuel Ramírez III, Ph.D.
P. Leslie Herold, Ph.D.

Systems and Evaluations in Education

133 Felix Street, No. 2
Santa Cruz, California 95060
(408) 427-2634

The work presented herein was performed pursuant to a grant from the Division of Bilingual Education, U.S. Office of Education, Department of Health, Education and Welfare. The opinions expressed do not necessarily reflect the position or policy of the U.S. Office of Education and no official endorsement should be inferred.

Education Service Center, Region XIII
Austin, Texas 78721

Joe Parks, Executive Director

Royce King, Director, Division of
Program Development

Dissemination Center
for
Bilingual Bicultural Education
6504 Tracor Lane
Austin, Texas 78721

Juan D. Solís, Director

FOREWORD

New Approaches to Bilingual, Bicultural Education is a series of teacher-training materials developed under an E.S.E.A. Title VII grant for the use of bilingual, bicultural projects. The materials propose a new philosophy of education called "cultural democracy" which recognizes the individuality of both teachers and students. By using the documents and videotapes, teachers and teacher associates can carefully study their own classroom techniques and the learning styles of their students. They then can use their new knowledge in ways which will best serve the needs of individual children.

The manuals in this series were edited by Pam Harper, staff editor, DCBBE. Covers and title pages were designed by Sarah Frey, assistant editor, DCBBE. Requests for information concerning the documents in this series should be addressed to the Dissemination Center for Bilingual Bicultural Education, 6504 Tracor Lane, Austin, Texas 78721. Accompanying videotapes are available from Videotetics, 2121 S. Manchester, Anaheim, California 92802.

Juan D. Solís, Director
Dissemination Center for Bilingual
Bicultural Education

PREFACE

This "teaching manual" is the fourth in a series of seven commissioned by the U.S. Office of Education in connection with the Bilingual Education Act (E.S.E.A., Title VII).^{*} The manuals, with accompanying videotapes and self-assessment units, are intended for use in bilingual, bicultural programs. It is envisioned that the materials will provide useful information about the education of culturally diverse children.

The manuals cover a wide range of topics, including educational philosophy, cultural values, learning styles, teaching styles, and curriculum. The three videotapes supplementing each manual review and illustrate subjects presented in the manual. Three self-assessment instruments of a "programmed" nature may be used to conclude the study of each manual. These evaluation instruments are designed both as a review and as a means of emphasizing important concepts.

The manuals, videotapes, and self-assessment units comprise a carefully designed course of study for persons engaged in bilingual, bicultural education. It is our sincere hope that the course of study will prove useful to such persons as they participate in this exciting and promising frontier of education.

^{*}Grant No. OEG-9-72-0154 (280), Project No. 14-0448.

COMPONENTS OF THE SERIES

NEW APPROACHES TO BILINGUAL, BICULTURAL EDUCATION

Teacher-Training Manuals — seven individual documents

1. A New Philosophy of Education
2. Mexican American Values and Culturally Democratic Educational Environments
3. Introduction to Cognitive Styles
4. Field Sensitivity and Field Independence in Children
5. Field Sensitive and Field Independent Teaching Strategies
6. Developing Cognitive Flexibility
7. Concepts and Strategies for Teaching the Mexican American Experience

Self-Assessment Units — one document

Includes three self-administered evaluation instruments for each of the seven manuals described above.

Videotapes

Three videotapes are available for each of the seven manuals described above. Each tape corresponds with a self-assessment unit. Further information regarding videotapes is available from the distributor, Videodetics, 2121 S. Manchester, Anaheim, California 92802.

NOTE

The components of this series may be used either individually or together. Every effort has been made to develop a flexible set of materials so that projects can choose which components are most helpful to them.

Field Sensitivity and Field Independence in Children

FIELD SENSITIVITY AND FIELD INDEPENDENCE IN CHILDREN

Introduction

This manual is intended to familiarize teachers with ways of measuring cognitive styles in children. The teacher's objective is to determine whether a particular child is field sensitive, field independent, or "bicognitive" (meaning that the child can function comfortably in both cognitive styles).

There are several ways to measure cognitive style in children. Two well-known techniques are the Portable Rod and Frame Test and the Child Embedded Figures Test. Both of these are described in this manual, along with their shortcomings. The major part of the manual describes how teachers can determine cognitive styles by observing children in the school setting. With the aid of "Child Rating Forms," the teacher observes a child's relationship to peers, personal relationship to teachers, instructional relationship to teachers, and the kinds of curriculum which facilitate that child's learning. These observations are used in describing the child as field sensitive, field independent, or bicognitive. With this information, the teacher can proceed to assign children to one of three instructional groups. A different teaching strategy is used for each group. These strategies (field sensitive, field independent, or combinations of the two) are described in the following manual.

Measuring Cognitive Style

During World War II, some airplane pilots would lose their sense of the upright when flying through clouds and emerge from the clouds flying upside down or with one wing up and one down. The armed forces were once interested in learning more about the causes of this problem. They were especially interested in finding a way to screen pilot trainees who became disoriented in adverse flying conditions. A psychologist, Herman Witkin, and his colleagues devised some unique assessment instruments to study this problem. One of these was the Body Adjustment Test. It consisted of a simulated room suspended on ball-bearing pivots so that the room could be tilted by any amount to the left or the right. The subject sat in a chair inside the room. The chair could also be tilted to the left or the right independently of the room. The test consisted of a series of trials in which the room and chair were initially tilted to the same side, and then to opposite sides. With the room remaining tilted the subject would direct the movement of the chair to the position that he perceived as upright. Witkin found that people differed on how they positioned the chair. Some had a tendency to leave it tilted to one side or the other, but most often people left the chair tilted in the direction in which the room was tilted. Others had little difficulty in returning the chair to the true upright. Witkin referred to these two modes of perception (or cognitive styles) as **field dependent** and **field independent**. Field dependent people appeared to rely on external cues and were unable to perceive their bodies as separate from the surroundings in making their decision as to what was upright. Field independents, on the other hand, did not base their decision on surrounding cues and appeared to have no difficulty perceiving their bodies as separate from the environment.⁽¹⁾

Additional research with instruments for assessing field independence led to the development of the Portable Rod and Frame Test (PRFT). This instrument rapidly gained popularity because it had the advantages of being more portable and simpler to administer

⁽¹⁾ As explained in Manual No. 3, cognitive style is operationalized in terms of a person's attention to wholes or parts. Field dependent persons tend to center their attention on patterns and wholes made up of smaller parts; they are more sensitive than field independent persons to the contexts in which stimuli are embedded. As in the last manual, we use the term field sensitivity rather than field dependence.

than the Body Adjustment Test. The Portable Rod and Frame Test consists of a translucent white plastic box which rests on a table. The person taking the test is seated and asked to position his head on a head rest at one end of the instrument. At the opposite end of the box, he can see a black frame surrounding a black rod. A screen is raised covering the person's eyes so that he is unable to see while the tester adjusts the rod and frame before starting a trial. The frame and the rod can be tilted independently of each other and on each of eight trials the frame is tilted 28° with the rod tilted the same number of degrees to the same or to the opposite side. The screen in front of the subject's eyes is lowered, and he is informed that the tester will move the rod three degrees at a time until he (the subject) states that it is vertical. An individual's score is expressed in terms of his average error in degrees from the true upright position. As in the case of the Body Adjustment Test apparatus, field sensitive persons have trouble perceiving the rod without focusing at the same time on the tilted frame. In relying so heavily on the frame to make their decision concerning the upright, they leave the rod tilted in one direction or the other, but usually in the direction of the tilt of the frame.

Using a rod and frame apparatus to measure cognitive style presents some obvious problems. The Portable Rod and Frame, for example, is an expensive device. Although portable, it is heavy and is too large to be used in a classroom without distracting children's attention. In addition, the test can be administered to only one child at a time.

Another instrument used in measuring cognitive style is the Child Embedded Figures Test (CEFT). This test is used to determine a child's ability to find a simple geometric figure which is hidden or embedded in a complex design. A child (or group of children) examines a pattern or shape and then, with the figure hidden from view, looks at a complex design printed on a card. The CEFT score is the number of hidden figures the child is able to find. Perhaps a simple example would give the reader a better understanding of the test.⁽²⁾ For purposes of this example, imagine that a field sensitive child and a field independent child are both shown a triangle and then, with the triangle removed from view, instructed to find the triangle in a picture. The picture depicts a sailboat tied to a pier. The field independent child's attention is drawn to the parts of the picture. He quickly isolates the triangular-shaped sail. The field sensitive child, however, tends to look at the picture as a whole. His attention is drawn to the boat as a boat rather than to the parts which make up the boat. Because his perception is dominated by the whole (or the entire context formed by the boat and pier), he has more difficulty finding the triangle than does the field independent child.

Criticisms of the PRFT and the CEFT

Shortcomings of both the Portable Rod and Frame Test (PRFT) and the Child Embedded Figures Test (CEFT) make these instruments less than satisfactory for assessing cognitive style. The authors have developed behavior observation rating forms which overcome these shortcomings. Perhaps the advantages of the behavior observation system will become apparent as we consider the limitations of the PRFT and the CEFT.

When a child positions his chin and looks into the PRFT apparatus, he sees a tilted square frame and a rod tilted in the frame. The examiner asks the child to indicate when the bar is upright or vertical. Many examiners have found that young children do not understand these instructions. Some do not know the meaning of **upright** or **vertical**. Children who basically understand the concept are intimidated by the size and complexity of the apparatus.

(2) This example is not taken from the Child Embedded Figures Test. The test may be ordered from the Psychological Corporation, 301 East 45th Street, New York, N.Y. 10017.

The CEFT is open to another kind of criticism. The CEFT is similar in format and administration to many intelligence tests and achievement tests. The formality of the testing situation often arouses emotions such as fear or anxiety which, in turn, impair performance. The child may then make errors. On many tests, failing an item is not upsetting because the child does not recognize the failure. This is not the case with the CEFT. Failures are glaringly obvious: there can be no question as to a child's having failed to find the embedded figure in some of the complex figures. After two or three failures, children become discouraged and no longer concentrate.

The CEFT items cannot be solved without concentration and careful attention to the complex designs. This requirement often works against field sensitive children. We mentioned in the last manual that field sensitive children tend to "glance" (look at the examiner and the testing room) more than field independent children. This behavior is very much in keeping with the "style" of field sensitive children. It does, however, distract the child from trying to remember the exact geometric shape he is supposed to find in the complex design. This problem is partly resolved if the child asks (which the examiner indicates he can do) to reexamine the simple geometric shape. Unfortunately, test taking can be a very intimidating experience for some children. The authors have found that many children (especially Mexican American children taking the test with an unfamiliar adult) do not ask to see the figure again, even when it is evident that they have forgotten the form they were instructed to find.

Both the PRFT and the CEFT can be criticized for biases in favor of field independent children. The instructions of both tests definitely "pull" behavior in a field independent direction. A child who might ordinarily organize his perceptions in a field sensitive way is therefore prompted to think and respond in a field independent way. Even if the child resists these pressures, his test score tells us little about the extent of his development in the field sensitive cognitive style. Instead, the PRFT and CEFT scores identify the extent of the child's **not** being field independent. The scoring systems of both tests thus clearly reflect a bias in which field sensitivity is reduced to a second-rate status. It is a cognitive style which is equated with error or low scores on the two tests. There can be no question that this approach to field sensitivity casts only field independence in a positive light. The emphasis on field independence also results in field sensitive children being viewed as less developed than field independent children. This is unfortunate, for field sensitivity encompasses a broad range of desirable behaviors. These include sensitivity to the social environment and ability to cooperate with others, attention to wholes formed by parts, and deductive thinking. It seems extremely shortsighted to ignore development along these lines.

Because of the field independent bias, existing tests of cognitive style do not enable us to determine the extent to which a child is attaining mental flexibility or competencies in both field sensitivity and field independence. We need to examine a system for measuring cognitive style that overcomes the one-sided emphasis of the PRFT and the CEFT. The next section considers a method for enabling us to determine a child's dominant or preferred cognitive style and, as well, the extent to which the child is developing in his nondominant (or "unfamiliar") cognitive style.

The Observable Behavior Rating System

There are a number of advantages in using children's classroom behavior as a basis for determining their cognitive styles. For one thing, fears of test failure are eliminated. Children are simply taking part in familiar activities and behaving in ways that are relatively natural. It is also important to recognize that the observer is not influencing the child to act in a particular way.

Using the observable behavior rating system, the observer looks for specific indicators of field independence and field sensitivity. At the end of several observation periods, the observer can determine on the basis of the child's behavior whether the child is primarily field sensitive, field independent, or "bicognitive." In addition, the observer will know which cognitive style forms the basis of that child's behavior in particular learning situations. It is helpful to a teacher to know if a child behaves in a field sensitive way in reading lessons and in a field independent way in math lessons. The Observable Behavior Rating System is intended to provide teachers with this kind of information.

Ways of Using the Rating System

The first and most important step in using any rating system is becoming thoroughly familiar with the rating system's objectives. The Observable Behavior Rating System is used in making judgments of children's cognitive styles. The categories describe behaviors reflecting different cognitive styles: relationship to peers, personal relationship to teacher, instructional relationship to teacher, and the kind of curriculum that facilitates learning. In the following pages we will describe the specific behaviors associated with each of these categories. After becoming familiarized with each category, the reader can begin to make plans for observing children and determining their preferred and unfamiliar cognitive styles.

Category One: Relationship to Peers

Children differ from one another in human relational styles. Field independent children are generally task oriented, giving little or no attention to the social environment of the classroom. They enjoy competing with classmates. They almost always approach recognition and achievement through individual effort. This kind of relationship to peers is an important characteristic of field independent children.

Field sensitive children generally share a more intimate relationship with their classmates. They enjoy working alongside one another to achieve a common goal. Field sensitive children approach learning as a cooperative and social venture. They help each other, share responsibilities, and seem most comfortable when working in pairs or small groups. Individual competition is as unnatural to these children as it is natural to field independent children. **Natural** is an important word in this comparison. It has been our experience that field sensitive children do not sit down and formally plan cooperative activities. Instead, they seem almost to drift or migrate in this direction.

Personal Relationship to Teacher

Field sensitive children often relate to teachers in much the same way they do to peers. They generally prefer to interact closely and openly express affection and positive feelings for the teacher. Field sensitive children are noticeably influenced by expressions of approval or disapproval from the teacher. They often actively seek approval ("Is this how you wanted me

to do it?" "Do you like the way I did it?").

The relationship of field independent students to the teacher is quite different from this description. Field independent students typically seem to be completely absorbed in what they are doing. They often seem to be working to meet standards they have set for themselves, rewarding themselves with expressions of self-approval when these standards are met. When they seek recognition from the teacher, their interest is primarily centered around correctness rather than the teacher's personal approval.

The interest field sensitive children have in the teacher as a person (rather than as resource) often includes interest in the teacher's life. Field sensitive children will seek information about the teacher's likes and dislikes ("Which is **your** favorite color?" or "What do you bring in your lunch bag?"). The teacher's personal experiences and family life are particularly interesting to field sensitive children: "Who gave you that ring?" or "What do you do when your children are sick?" Field sensitive children also identify with the teacher, using the teacher as an example for their own attitudes and behaviors. The teacher as a **person** is important to field sensitive children: they often seek to become like the teacher.

Field independent children usually prefer a more formal relationship. They sometimes even resent an adult who distracts them with comments intended to personalize the student-teacher relationship ("That's just the way I would do it, José," or "Why don't you do the next one the way you think I would?"). It is important to keep in mind that field independent children are not antisocial. In other words, their preference for self-directed learning should not be interpreted as a rejection of the teacher.

Instructional Relationship to Teacher

The contrasts we've described between field sensitive and field independent children apply directly to the area of instruction. With their preferences for self-direction, field independent children usually like to try a new task without the teacher's help. It is almost as if they are saying: "I'd like to see how I can do on this as a test of myself. If you show me how to do it, I won't have a chance to prove myself." This attitude leads field independent children to seek challenges, especially ones that will result in feelings of cleverness, skill, or special ability. Beating classmates to the finish is a common goal among these children (making them more time-conscious than field sensitive children). Field independent students seek rewards which indicate meeting a standard (such as receiving a gold star or having a worksheet posted on a bulletin board).

These descriptions rarely apply to field sensitive children. Rather than seeking an opportunity to try something new completely on their own, these children prefer to have the teacher demonstrate and provide guidance. Here again their behavior suggests a preference for modeling, for using the teacher as an example. The rewards preferred by field sensitive children reflect the importance they attach to the teacher as a person. Field sensitive children prefer to be rewarded in a way that signifies a strengthening of the relationship with the teacher ("You know your multiplication tables so well that I want you to be my special helper. After lunch you can help me teach multiplication to some of the other children.").

Characteristics of Curriculum Which Facilitate Learning

We have found in our work that different kinds of curriculum facilitate learning among field sensitive and field independent children. One of the most obvious differences is the

importance the materials attach to wholes and to parts. Field independent children, for example, center their attention on details and work from there to larger concepts. An example of this curriculum preference is provided in the videotape corresponding to Manual No. 5 ("Field Sensitive and Field Independent Teaching Strategies"). One of the teachers shown in this videotape draws her students' attention to small differences in the two parts of a triangle. This lesson is obviously geared to an **analytic** cognitive style, or to a tendency to analyze wholes into their component parts. Field independent students do well on this kind of task and need little urging to pay attention to isolated details.

Commercial curriculum, especially in the area of science and math, usually does not facilitate learning among field sensitive children. This seems to be due in part to the stress these materials place on analyzing component parts of wholes. Field sensitive children generally prefer materials which emphasize global characteristics of objects and concepts (see Manual No. 3). This preference is expressed in attentiveness to wholes and contexts: "That looks like a man — the circles could be eyes and the triangle could be his nose."

Field sensitive children also like to know how a lesson or activity fits into a bigger picture. What is the objective of the lesson? What will they know how to do at the end of the lesson? How does this lesson relate to other things they have learned? How will the lesson be useful to them in other activities? For this reason, learning is facilitated for these children when the teacher carefully describes the purpose of the lesson and its significance to the children: "Today I am going to show you how to count by twos: after you learn how to do this, you will be able to count things quickly — like the pennies in your bank." Sometimes the instructional materials, themselves, satisfy this requirement by illustrating **in advance** what the work or assignment will look like when completed. When materials provide this kind of overview, field sensitive children are more comfortable and interested. Materials which stress discovery of a concept from studying small details often bore these children and leave them unexcited about learning.

Most field independent learning materials also fail to allow students an opportunity to relate personally to what is being taught. Field sensitive children "warm up" to instructional materials which are relevant to their own lives and experiences. They enjoy materials which present concepts in a humanized or personalized way. The Sesame Street television program contains many examples: geometric objects have faces and feelings, a snake talks and turns into the letter *s*, and numbers appear in settings of everyday familiarity to children.

Another aspect of Sesame Street which fits in well with this learning style is the use of stories. Stories provide an ideal backdrop for presenting concepts in a colorful and humanized way. In teaching a phonics lesson, for example, a teacher can weave humanized materials into a plot. A mother snake (capitalized *S*) might teach a young snake (lower case *s*) how to say his name. Later in the story the young snake might enter into adventures with characters representing other letters. Stories of this kind facilitate learning of field sensitive children even more when the stories are related to the students' lives or experiences. Readers who have viewed the videotape corresponding to Manual No. 2 have seen one teacher use materials which resemble this description. The lesson in question was based on the story of several animals who came down from the mountains seeking lodging. As the number of animals increased, the houses (actually columns of ones, tens, and hundreds) quickly filled. The

animals expressed concern that they would be left outside but were then reassured that there would always be room in houses to the left of the ones that were full. The animals could not, however, enter **any** house; they were required to move from right (ones) to left (tens and hundreds) until they found a vacancy. Throughout this lesson, the teacher took care to mention the feelings of the animals and similarities of the situation to the students' experiences: "At your trailer park, Joey, do all the trailer spaces have numbers? Trailer One belongs in one place; each trailer goes in a different place. This is what happens to numbers — all the numbers have a place." The teacher then illustrated this principle by returning to the story of the animals. Numbers, like animals in the story, must observe certain rules in occupying specific columns or spaces.

Determining a Child's Preferred Cognitive Style

The Child Rating Forms at the conclusion of this manual can be used in answering two questions: (1) Is a child **in general** predominantly field sensitive or field independent? and (2) to what degree is a child becoming bicognitive? Let us consider first how the teacher would answer the first of these questions.

Once a child has been selected, the rater should examine each category of **both** rating forms ("Field Sensitive Observable Behaviors" and "Field Independent Observable Behaviors") and determine how well that category describes the child. For example, the teacher may feel that "Prefers to work independently" is "Almost always true" of a child. It is very useful if a coworker can rate the same child **without looking at the first observer's ratings**. After independently completing their ratings, both persons can compare similarities and differences in their ratings. Often the discussions that follow from these comparisons help teachers to arrive at a common meaning of "Not true," "Seldom true," etc. The discussions also provide teacher and teacher associates with an opportunity to acquaint one another with overlooked or misunderstood aspects of the child's behavior.

When both rating forms have been completed and discussed, the raters are ready to arrive at a judgment of the child's preferred cognitive style (field sensitive or field independent). We refer to this as a "global" rating. The objective of a global rating is to establish whether a child generally displays the behaviors of one cognitive style more than the other. In some cases, of course, it is impossible to say whether the child's preferred cognitive style is field sensitive or field independent. In other words, a child may display mixtures of the two cognitive styles in most school situations. Nonetheless, teachers who are familiar with the behavior observation rating system can determine the preferred cognitive style of **most** children in the class. (The concept of bicognition is the topic of Manual No. 6.)

Observing Growth in the Unfamiliar Cognitive Style

One of the goals of culturally democratic education is helping children become bicognitive, to function comfortably and competently in **both** the field sensitive and field independent cognitive styles. A child does not develop in only his preferred cognitive style. Depending on the situation, a bicognitive child can learn and relate to other people in either a field sensitive or a field independent manner. In a field independent math lesson, for example, a child whose preferred cognitive style is field independent feels familiar with an abstract, impersonal curriculum. He enjoys competition and learns well when the teacher emphasizes individual effort. In a field sensitive math lesson (based on the child's "unfamiliar" cognitive style), the

child easily makes the transition from a math lesson which emphasizes inductive reasoning to one which emphasizes deductive reasoning. He can work just as well cooperating with his classmates as he can when competing with them in the field independent math lesson.

As our description suggests, bicognitive children are flexible and adaptable. The flexibility and adaptability seems to carry over into areas other than schooling. In many cases these children are bilingual (suggesting that part of their mental flexibility comes from having alternative labels and symbols for reasoning and thinking).(3) These children often are bicultural, having become familiar as children with two cultures (such as the Mexican American culture and the mainstream American culture). Having achieved linguistic and cultural flexibility (and resulting flexibility in cognitive style), bicognitive persons are able to function effectively in very diverse settings.

How can a teacher determine if a child is becoming bicognitive? To answer this question, the teacher must have decided whether the child's preferred cognitive style is field sensitive or field independent (or intermediate). Once this decision has been reached, the teacher should begin observing the child while participating in lessons based on the child's unfamiliar cognitive style. Imagine, for example, that after comparing their separate "global" ratings, a teacher and teacher associate have agreed that a child's preferred cognitive style is field sensitive. The child would then be assigned to a small group of children, all of whom are judged to be field sensitive. Instruction in this group is based almost entirely on the field sensitive teaching strategy described in the following manual. Once the child appears thoroughly comfortable and familiar with learning a particular subject matter (such as math) in a field sensitive way, the teacher arranges for the child to be introduced slowly to field independent math lessons. As the child is exposed to the unfamiliar teaching style, the teacher and teacher associate continually rate the child with the "Field Sensitive Observable Behaviors" Child Rating Form. When the child regularly displays the behaviors described in this form during field independent lessons and continues to display field sensitive behaviors during field sensitive lessons, the teacher can conclude that the child is becoming bicognitive.

In promoting bicognitive development in children, then, the teacher follows this sequence:

1. A "global" rating is used to determine a child's preferred cognitive style.
2. The child is assigned to a group in which instruction is matched to his preferred cognitive style.
3. The child is gradually introduced to functioning in the unfamiliar cognitive style.
4. The child is continually observed to determine the extent to which he is displaying behaviors of the unfamiliar cognitive style (and thereby becoming bicognitive).

In the following manual, we will consider the second step in this sequence, that of matching instruction to cognitive styles.

(3)For a thorough discussion of this subject, see E. Peal and W. Lambert, The relation of biligualism to intelligence, *Psychological Monographs, General and Applied*, 1962, 76 (27, Whole No. 546).

CHILD RATING FORM FIELD INDEPENDENT OBSERVABLE BEHAVIORS

Instructions: Evaluate the child for each behavior listed below by placing a check in the appropriate column.

Child's Name _____ Grade _____ School _____ Date _____

Observer's Name _____

Situation (e.g., "Math lesson"); for general or overall rating, write "Global" _____

FIELD INDEPENDENT OBSERVABLE BEHAVIORS	FREQUENCY				
	NOT TRUE	SELDOM TRUE	SOMETIMES TRUE	OFTEN TRUE	ALMOST ALWAYS TRUE
RELATIONSHIP TO PEERS					
1. Prefers to work independently					
2. Likes to compete and gain individual recognition					
3. Task oriented; is inattentive to social environment when working					
PERSONAL RELATIONSHIP TO TEACHER					
1. Rarely seeks physical contact with teacher					
2. Formal; interactions with teacher are restricted to tasks at hand					
INSTRUCTIONAL RELATIONSHIP TO TEACHER					
1. Likes to try new tasks without teacher's help					
2. Impatient to begin tasks; likes to finish first					
3. Seeks nonsocial rewards					
CHARACTERISTICS OF CURRICULUM WHICH FACILITATE LEARNING					
1. Details of concepts are emphasized; parts have meaning of their own					
2. Deals with math and science concepts					
3. Based on discovery approach					

CHILD RATING FORM
FIELD SENSITIVE OBSERVABLE BEHAVIORS

Instructions: Evaluate the child for each behavior listed below by placing a check in the appropriate column.

Child's Name _____ Grade _____ School _____ Date _____

Observer's Name _____

Situation (e.g., "Math lesson"); for general or overall rating, write "Global" _____

FIELD SENSITIVE OBSERVABLE BEHAVIORS	FREQUENCY				
	NOT TRUE	SELDOM TRUE	SOMETIMES TRUE	OFTEN TRUE	ALMOST ALWAYS TRUE
RELATIONSHIP TO PEERS					
1. Likes to work with others to achieve a common goal					
2. Likes to assist others					
3. Is sensitive to feelings and opinions of others					
PERSONAL RELATIONSHIP TO TEACHER					
1. Openly expresses positive feelings for teacher					
2. Asks questions about teacher's tastes and personal experiences; seeks to become like teacher					
INSTRUCTIONAL RELATIONSHIP TO TEACHER					
1. Seeks guidance and demonstration from teacher					
2. Seeks rewards which strengthen relationship with teacher					
3. Is highly motivated when working individually with teacher					
CHARACTERISTICS OF CURRICULUM WHICH FACILITATE LEARNING					
1. Performance objectives and global aspects of curriculum are carefully explained					
2. Concepts are presented in humanized or story format					
3. Concepts are related to personal interests and experiences of children					

**DISSEMINATION CENTER FOR
BILINGUAL BICULTURAL EDUCATION**

STAFF

Juan D. Solís, Director
Blanche Armendáriz, Staff Editor
Joanna F. Chambers, Research Librarian
Sarah D. Frey, Assistant Editor
Pam Harper, Staff Editor
Stephan L. Jackson, Internal Evaluator
Ernest Pérez, Bilingual Curriculum Specialist
Elsa Sánchez de la Vega-Lockler, Staff Editor
Suzanna Cortez, Distribution Clerk
Martha Basden, Secretary
Veola Berry, Dissemination Clerk
Dahlia López, Typist
Joanna Melcher, Typist
Fanny Wheat, Secretary

"The project reported herein was performed pursuant to a Grant from the U.S. Office of Education, Department of Health, Education and Welfare. However, the opinions expressed herein do not necessarily reflect the positions or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred."

The Dissemination Center for Bilingual Bicultural Education is a special Title VII ESEA project funded by the U.S. Office of Education through Education Service Center, Region XIII. The Center has selected these materials for dissemination; however, the opinions expressed herein do not necessarily reflect its position or policy nor that of Education Service Center, Region XIII.

This publication was developed and printed with funds provided by Title VII of the Elementary and Secondary Education Act of 1965, as amended. Therefore, it is in the public domain and may be reproduced for local use.

Printed in the United States of America