Appendix B

ANISA Testing Program Materials[1]

[1]Materials have been revised by incorporating many suggestions that came from the April and May testing program in the schools.

ANISA TESTING PROGRAM

Evaluation of the development of selected aspects of learning competence during the 1973-1974 school year required measurement of seven processes underlying learning competence. These were:

Process 1 - Classification

Process 2 - Seriation

Process 3 - Attention

Process 4 - Figure-Ground

Process 5 - Verticality

Process 6 - Cooperation

Process 7 - Inflections

This document presents the general instructions to examiners using the tests selected or developed to measure these processes as well as administration instructions for each specific test.

General Instructions to Examiners:

The tests of the seven processes are all designed to be individually administered in less than one-half hour. Before attempting to administer any of the tests, please read the test instructions thoroughly. Whenever possible, it will be useful to attempt one or two trial administrations before beginning the actual testing. For each test there is some indication about what to say to each child

during the administration of the test. However, as these tests are being administered to very young children, their responses during the testing are often unpredictable, hence, the examiner will often be "on his own" during the testing. A thorough understanding of the purpose of each test and a familiarity with the administration instructions should alleviate most difficulties.

Test 1 - Measurement of Classificatory Behavior

Overview

The measurement of classificatory behavior in the ANISA evaluation project is carried out by administering four tasks to the student. Note that if a student cannot successfully complete one of the parts of a task, testing should be discontinued on that particular task and the examiner should move to the next task in the sequence. The total amount of testing time required should not exceed thirty minutes.

Suggestions for Administering the Tasks

The test administration will be improved considerably if a few precautions are observed.

First (and especially if the tester is not the classroom teacher), it must be constantly kept in mind that the test is being administered to very young children; moreover, it is unlikely that they have ever been given a similar test. Hence, the examiner must be very explicit and very clear in the directions given the child and very patient if the child has difficulty understanding.

Secondly, it is important that the child's cognitive skills be tested not simply his perceptual skill. More explicitly, if a child is told to "group these on the basis of color," he simply calls on his memory to tell him what blue looks like and what red looks like, uses his perceptual skills to tell him which is which, and sorts on this basis. He has already been told there is a difference between the blocks and what that difference is. This is not a test of cognitive

skills. It is critical to avoid saying, "Please sort these blocks on the basis of color (or shape, or whatever)," instead, directions must be: "Please put those things together that you think go together. Do it any way you want."

Thirdly, it is important that the child be required to verbally justify the choice he has made to, say, fill the gap in a 2 x 2 matrix measuring multiple class membership. There may be any number of reasons he has made the choice he has made, and it is critical to determine whether he has made the choice because of his mastery of the sub-skill of concern.

Description of Tasks

1. Multiple Class Membership (Task 1)

   - The objective here is to determine if the student understands that an object may belong to more than one class at the same time.

   (a) Materials

   3 yellow triangles
   3 yellow squares
   3 red triangles
   3 red squares
   2 circular hoops about 12" in diameter

   (b) Activity

   A. Arrange triangles and squares in disorganized fashion in front of the student.

   B. Begin by asking the student to place all the triangles inside one of the circles. (Score)

   C. Ask student to place all of the rest of the things that are red in the other circle. (Score)

   D. Place the circles so they overlap but leaving the intersection open and the blocks in the non-overlapping parts of the circle.

E. Place your finger in the area of intersection of the two circles and ask, "What kinds of things could we put in here?" (Score)

(c) Scoring

On the answer sheet, indicate the correctness of a student's answers to steps, B, C, and E. (If a student "passes" an activity, mark "P" and if the student "fails" an activity, mark "F".) Of course the student receives a "pass" for activity E if he places the red triangles in the area of intersection.

2. Some and All Relations (Task 2)

The objective here is to determine if the student understands the relationship between a whole class and the components of that class.

(a) Materials

2 blue circles
4 blue squares
3 red circles

(b) Activity

A. Arrange circles and squares in a disorganized fashion in front of the student.

B. Ask him to organize the objects as many ways as he can. Have him assign a label to each category (maximum of four). The categories are "blues", "reds", "squares," and "circles." Encourage student to complete the task. (Score)

C. Than ask a series of questions

C.1 Are all the <u>red</u> objects, circles? Why? (YES) (Score)

C.2 Are all the circles <u>red</u>? Why? (NO, some circles are blue). (Score)

C.3 Are all <u>squares</u>, <u>blue</u>? Why? (YES) (Score)

C.4 Are all the <u>blue</u> objects, <u>squares</u>? (NO, some blues are circles) (Score)

(c) Scoring

Activity B is scored on the range 0 to 4. For activities C.1, C.2, C.3, and C.4, student receives a pass (P) for each activity that he completes successfully (he must provide correct responses, i.e., yes or no, and explanation), otherwise a fail, marked "F".

3. Relation Between Parts (Task 3)

- The object here is to determine if the student understands that the whole is equal to the sum of its parts.

(a) Materials

2 yellow square blocks
2 blue square blocks
2 red square blocks (all 6 square blocks must be of the same size)

(b) Activity

A. Arrange the square blocks in a disorganized fashion in front of the student.

B. Is there any way that the objects can all go together? (Score)

C. Is there any way that the objects can be put together in different groups? (Score)

D. Now I would like to read you a little story,

"Mary and Joan wanted to build a tower with these square blocks. Mary said they could make the highest tower if they took all the red square blocks, all the blue square blocks and all the yellow square blocks, and put them together. Joan said that they could make the highest tower if they took all the square blocks and put them together."

Who is correct, Mary or Joan? Who will have the tallest tower and why? (Score)

(c) Scoring

Activity B is scored pass/fail. The student is passed if he mentions that all of the objects are squares or

square blocks. The student passes activity C if he notes that the objects can be separated into "reds", "yellows", "blues." If the student suggests that the two towers will be of equal height he is scored as a "pass" on activity D.

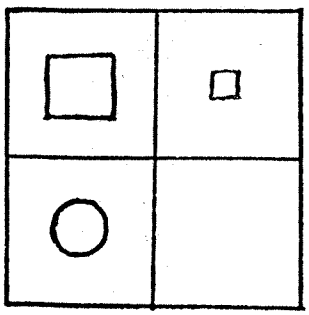
4. Multiple Class Membership (Task 4)

- The objective here is to determine if the student understands that an object can be classified on the basis of more than one characteristic.

(a) Materials

One 2 x 2 matrix, and one 3 x 2 matrix looking like this:

I



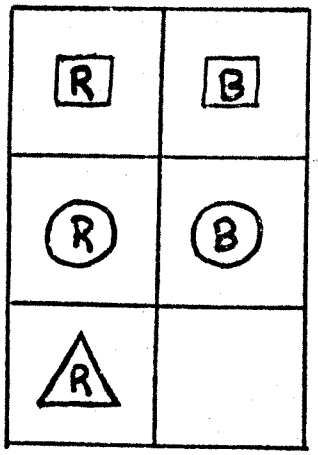
(R=red color, B=blue color)

Alternatives:

1.  2. 

3.  4. 

II



Alternatives: 1.  2. 

3.  4.  5.  6. 

(b) Activity

A. Show the child the first matrix.

B. Show him the alternatives that can go in the blank space.

C. Ask the child, "Which of these do you think goes in the blank space? Why? (Score)

D. Show the child the second matrix.

E. Show him the alternatives that can go in the blank space.

F. Ask the child, "Which of these do you think goes in the blank space? Why?" (Score)

(c) Scoring

Activities C and F are scored pass/fail. The student is passed on activity C if he chooses alternative (4). The student is passed on activity F if he chooses alternative (6).

SCORING OF CLASSIFICATORY BEHAVIOR

NAME	TASK I			TASK II					TASK III			TASK IV	
	B	C	E	B	C1	C2	C3	C4	B	C	D	C	F

Test 2 - Measurement of Seriation

Seriation is a process of arranging on the basis of ordered differences concrete objects and events, abstract ideas and constructs for the purpose of organizing one's environment. Specifically, seriation involves differentiating the quantitative variabilities among an array of elements and integrating these differences to form a graded pattern which can be extended (generalized) to include other elements beyond the original array, sharing differences on the same dimension(s). For example, in the case of ten sticks of varying length, seriation would require differentiating the quantitative variable, length, and ordering the sticks on the basis of length. Subsequently additional examples could be inserted into the graded pattern.

Seriation tasks, such as the ordering of sticks, cards, blocks, etc., can be used as diagnostic techniques to indicate the developmental level (e.g., pre-operational, concrete operational, etc.) on which the child is functioning. Such information can be deduced by observing the child's activity in terms of the amount of time required to complete the task, the predominance of trial and error attempts, the ability to anticipate a series before constructing it, and the child's overall strategy in performing the task.

The present evaluation instrument consists of four tasks, three of which are concerned with the seriation of one, two, or three dimensional objects, and one dealing with the anticipation of seriation. Each task description is broken down into four distinct sections:

1. a description of the objective for that task,
2. a description of the materials to be used for that task,
3. an explanation of the procedure to be followed and the suggested dialogue (instructions) for that task, and

4. a scoring key for that task.

The test administrator should thoroughly familiarize himself with each task before attempting to administer the test. Particular attention should be given to the activity and scoring sections since precise compliance is essential.

Task I: To order a set of concrete, single dimensional objects which vary along that dimension.

Materials: Eleven wooden sticks [6" x 1/4" x 1/4", 5 3/4" x 1/4" x 1/4", . . . , 3 1/2" x 1/4" x 1/4"]

Activity:

1. Six sticks, [6" x 1/4" x 1/4", 5 1/2" x 1/4" x 1/4", . . . , 3 1/2" x 1/4" x 1/4"], are placed together in front of the child. The sticks should be presented in a cluster and in random order.
2. The child is told to "put these sticks (pointing at the sticks) in order, in a series, with the longest on the right (pointing) and the shortest on the left."
3. If the child correctly orders the six sticks, the remaining five sticks are handed to the child one at a time and the child is told to "put this in the place it belongs."

Scoring Procedure: See Figure 1.

Figure 1. Scoring System for Tasks 1, 2, and 3

	STAGE	DESCRIPTION	SCORE
I.	NO SERIATION	The child fails to put any of the objects in order.	0
II.	PARTIAL SERIATION	The child puts only some of the objects in order.	1
III.	PRE-OPERATIONAL SERIATION	The child puts all the first six objects in order, but by trial and error. Does not put the remaining five objects in the proper order.	2
IV.	PRE-OPERATIONAL SERIATION WITH EXTENSION	The child puts all the first six objects in order, but by trial and error. Also, the child puts the remaining five objects in the proper order.	3
V.	OPERATIONAL SERIATION	The child puts all the objects in order by proceeding systematically, by looking for the largest (or smallest) element first, the next largest (or smaller) second, etc. The child does not put the remaining five objects in the proper order.	4
VI.	OPERATIONAL SERIATION WITH EXTENSION	The child puts all the first six objects in order by proceeding systematically, by looking for the largest (or smallest) element first, the next largest (or smallest) second, etc. Also, the child puts the remaining five objects in the proper order.	5

Task II: To order a set of concrete, two dimensional objects which vary on one dimension.

Materials: Eleven rectangular cards:

[4" x 4", 4" x 3 3/4", . . . 4" x 1 1/2"]

Activity:

1. Six cards [4" x 4", 4" x 3 1/2", . . . , 4" x 1 1/2"], are placed together in front of the child. The cards should be presented in a cluster and in random order.
2. The child is told to "put these cards in order (pointing to the cards), in a series, with the longest on the left (pointing) and the shortest on the right."
3. If the child correctly orders the six cards, the remaining five cards are handed to the child one at a time and the child is told to "put this in the place it belongs."

Scoring Procedure: Same as for Task I.

Task III: To order a set of concrete, three dimensional objects which vary on one dimension.

Materials: Eleven rectangular solid blocks [3 1/2" x 3 1/2"x 3 1/2", 3 1/4" x 3 1/2" x 3 1/2",. . . , 1" x 3 1/2" x 3 1/2"]

Activity:

1. Six blocks [3 1/2" x 3 1/2" x 3 1/2" , 3" x 3 1/2" x 3 1/2" . . . , 1" x 3 1/2" x 3 1/2".] are placed together in front of the child. The blocks should be presented in a cluster and in random order. Make sure that the blocks remain on their base at all times. If a child turns a block off its base, replace the block at once and instruct the child to "keep the bottom side down."
2. The child is told to "put these blocks in order (pointing to the blocks), in a series, with the tallest on the right (pointing) and the shortest on the left."
3. If the child correctly orders the six blocks, the remaining five blocks are handed to the child one at a time, and the child is told to "put this in the place it belongs."

Scoring Procedure: Same as for Task I but change the word "stick" to "block".

Task IV: To anticipate a series of seven sticks by constructing a drawing in color of the ordered sticks and then to actually order the sticks.

Materials:

1. Seven wooden sticks [6" x 1/4" x 1/4", 5 3/4" x 1/4" x 1/4", . . . , 4 1/2" x 1/4" x 1/4"].
2. An assortment of crayons to match the color of each stick.
3. Drawing paper.
4. One pencil.

Activity:

1. Seven sticks are placed together in front of the child. The sticks should be presented in a cluster and in random order.
2. The child is told to "put these sticks in order, in a series, with the tallest on the right and the shortest on the left; but first guess what the arrangement will be and make a drawing of it." The crayons and drawing paper should be placed in front of the child.
3. If the color drawing is incorrect, ask the child to draw the arrangement in pencil.
4. When the drawing is done, ask the child to "now put the sticks in order, in a series."

Scoring Procedure: See Figure 2.

Figure 2. Scoring System for Task IV

STAGE	DESCRIPTION	SCORE
No anticipation, no seriation	The child does not anticipate the series by either drawing in crayons or pencil.	0
Semi anticipation pre-operational seriation	The child draws the series without any correspondence between the crayons and the color of the objects. When the child is asked to put the sticks in order, he does it by trial and error.	1
Partial correspondence pre-operational seriation.	The child draws the series with colors matching only some of the objects. Seriation is still by trial and error.	2
Anticipation, pre-operational seriation	The child draws the series correctly with colors matching the objects. Seriation is still by trial and error.	3
Anticipation, Operational Seriation	The child draws the series correctly with colors matching the objects. Seriation is operational.	4

SCORING OF SERIATION

NAME	TASK I	TASK II	TASK III	TASK IV	Total

Test 3 - Measurement of Attention

Overview

This test is a measure of the examinee's attention behavior. The test requires the examinee to sort various decks of cards on the basis of symbols displayed on the face of the cards. In all, the examinee must sort as rapidly as possible, two practice decks and four test decks during the examination. Each test deck consists of 24 cards while each practice deck has 12 cards. Table 1 contains examples of the stimuli found on each deck of cards.

Each of the first three test decks are defined by a binary dimension. Each examinee will be required to sort these decks into two piles with each pile defined by one of the binary values of the stimuli. Test Deck four may be sorted on the basis of any of the three binary dimensions represented on the card. For instance the deck may be sorted into piles on the basis of the Form dimension (i.e., the square and circle). Then one pile will consist of all the cards with squares and the other will consist of all the cards with circles. Thus only the form dimension is relevant to the task, the other dimensions are irrelevant. Clearly it is also possible to sort on the basis of the other dimensions (i.e., position of star and orientation of line). Please read all instructions before attempting to administer the test.

Materials

The test materials consist of two 12 card practice decks and four 24 card test decks, eight stimulus display cards, a stopwatch, an Attention Test Score Form and a red cover card.

Table 1

Sample Test Stimuli

Deck	Stimuli
Practice Deck One	
Practice Deck Two	
Test Deck One	
Test Deck Two	
Test Deck Three	
Test Deck Four	

Administration Instructions

Before beginning the test, make sure all the arrows on the back of the cards are facing the same way. The following instructions should be recited to each child (directions in parentheses are directions for the examiner):

Hi. I'm _____. I'd like you to play a game. Here is a pile of cards (place practice deck one face up in front of the examinee keeping the face of the cards covered with the red cover card. The cards should be placed so that the arrows on the back point to the examiner). I want you to make two piles and it is very important to go fast. Every card has a dot in the center. Now all the cards with a triangle go here. (Place the triangle stimulus display card to the right of the child and point to the area in front of the card.) and all the cards with a diamond go here (Place the diamond stimulus display card to the left of the child and point to the area in front of it). Do you understand? (If not, explain the directions again.)

OK, now let's try it with these cards. (Point to practice deck one and ask the child to place his hands on either side of the deck). Remember cards with a triangle on them go here and cards with a diamond go there. When I take the red card off the top and say go, you put each card in the right place. If you put a card in the wrong pile do not change it, just go as fast as you can with the rest of the cards. OK. Ready Go (say go as you remove the red cover card. If the child does not sort the cards or makes more than two mistakes, re-explain the directions and ask him to sort the practice deck again. If

the child still does not understand or makes more than six mistakes, ask him to return to the classroom and note on the Attention Test Scoring Form that he could not sort practice deck one. If the child makes fewer than six mistakes allow him to proceed. For each remaining deck use the following instructions:)

Very good, here are some different cards (Bring out the next deck). This time if there is a _____ (name the stimulus and place the stimulus display card to the right of the child) on it it goes here (point to the area in front of the stimulus display cards) and if there is a _____ (name the other stimulus and place the stimulus display card to the left of the child) it goes here (point to the area in front of the stimulus display card). Put your hands on either side of the deck. Remember work as fast as you can. Begin when I take the red card off the top and say Go. OK Ready Go.

The order of the decks and the position of the stimulus display cards and the piles should always be:

Sort 1 Practice Deck One: triangle to the right of the child, diamond to the left.

Sort 2 Practice Deck Two: stimulus display card and pile position the same as for Sort 1.

Sort 3 Test Deck One: Circle to the right of the child, square to the left.

Sort 4 Test Deck Four - Form Relevant: Stimulus display card and pile position the same as for Sort 3.

Sort 5 Test Deck Two: Star above dot to the right of the child,

star below dot to the left.

Sort 6 Test Deck Four -- star relevant: stimulus display card and pile position the same as for Sort 5.

Sort 7 Test Deck Three: Horizontal line to the right of the child, vertical line to the left of the child.

Sort 8 Test Deck Four -- orientation of line relevant: stimulus display card and pile position the same as Sort 7.

The deck should always be placed with all the arrows on the back of the cards facing the examiner.

The examiner should not mention that there may be other symbols on the cards when practice deck two or test deck four is used.

Each test deck sorting is scored by timing the sorting procedure from when you say go and remove the red card, until the student sorts the last card. In addition you must count the number of errors made by the student and record the information. The time and the number of of errors are to be marked on the Attention Test Score Form.