DOCUMENT RESUME

ED 053 183 TM 000 713

AUTHOR	Sandler, Louise; And Others
TITLE	Developmental Test Performance and Behavioral Styles of Disadvantaged Nursery School Children.
PUB DATE	May 71
NOTE	23p.
EDRS PRICE	EDRS Price MF-$0.65 HC-$3.29
DESCRIPTORS	*Behavior, Developmental Programs, *Developmental Tasks, *Disadvantaged Youth, Family Background, Learning Difficulties, Negro Youth, *Nursery Schools, *Screening Tests, Testing, Verbal Ability
IDENTIFIERS	DDST, *Denver Developmental Screening Test, Get Set Program

ABSTRACT

Deviant functioning within preschoolers in a Get Set program was assessed in order that an effective screening instrument could be utilized for early identification of learning disorders in disadvantaged children. (AG)

DEVELOPMENTAL TEST PERFORMANCE AND BEHAVIORAL STYLES OF DISADVANTAGED NURSERY SCHOOL CHILDREN

Authors: Louise Sandler, Ph.D., Hahnemann Medical College and Hospital
Daniel Jamison A.M. University of Pennsylvania
Oswald deLiser, M.A. Hahnemann Medical College and Hospital
Leonard Cohen, Junior Medical Student, Hahnemann Medical College and Hospital
Kenneth Emkey, Junior Medical Student Hahnemann Medical College and Hospital
Helen Keith, Junior Medical Student Hahnemann Medical College and Hospital

DEVELOPMENTAL TEST PERFORMANCE AND BEHAVIORAL STYLES OF DISADVANTAGED NURSERY SCHOOL CHILDREN

(L. Sandler, D.Jamison, O. deLiser, L. Cohen, K. Emkey, H.Keith)

This investigation was concerned with the study of the developmental functioning of young children attending the Get Set preschool program of the Philadelphia Public School System. Through the use of a previously standardized screening test that yields a description of the child's behavioral skills, the investigators assessed "typical" responses of a large number of preschool children in order to understand what may be considered deviant functioning within the study population. Through this examination procedure, it was hoped that an effective screening instrument could be utilized for the early identification of disadvantaged children requiring attention.

In recent years, there has been repeated documentation of the influences of cultural and economic privations upon the learning efficiency of the developing child.[7] As studies accumulate, there has been a growing tendency to generalize descriptions of the disadvantaged child as showing inadequate achievement motivation,[8,11] as being deficient in language skills,[1,3] and as having poor perceptual abilities.[10] The present authors question these generalizations and point out that if such developmental

The authors wish to express their appreciation to the administration and staff of the Get Set-Day Care Program of the Philadelphia Board of Education.

deficiencies are characteristic of disadvantaged preschool children, then the interpretation of developmental delay as an indicator of idiosyncratic aberrancy loses all significance. On the other hand, if the data show that disadvantaged children are functioning in line with developmental and maturational expectations, then the individual child showing deficient behavioral skills cannot be viewed as representative of a group norm. Rather, he should be recognized as a child needing remediation. There is a great need in preschool nursery programs for early identification of the individual child requiring special attention.

PROCEDURE AND METHODS

During a ten week research fellowship, three medical students administered developmental tests to Negro children attending Federally funded preschool nursery programs in Philadelphia. All testing and data gathering were carried out within the facilities of the nursery programs. The nursery centers were in churches, schools and community centers and each contained an average of three classrooms. A total of eleven centers were studied. The centers for study were selected in order to represent a geographic cross-section of this total preschool program.

Sample

Data were collected for a total of 373 children. As Table I shows, the number of boys and girls was almost equal within

the study population. (Boys - 185; Girls - 188)

The largest number of children studied are in age groups 55-60 months and 61-66 months.

TABLE I

Age Group and Sex Distribution of the Study Population

	Age group in Months					
	36-42	43-48	49-54	55-60	61-66	Over 66
Boy	4	29	45	59	47	1
Girl	8	24	34	58	62	2
Total(373)	12	53	79	117	109	3
Percent	3.2	14.2	21.2	31.4	29.2	.8

Family Backgrounds of the Study Population

To arrive at a description of the family structure and background of the children, data were gathered from teacher's records of the educational and occupational status of the parents. Analysis of the data permits a general description of the family structure. The data showed that 60% of the homes are without a father. In those families with a father, he is an unskilled laborer. Formal education of both the father and mother ranges from seven to eleven years of schooling, usually with the mother reaching a higher grade level. Mothers who are employed generally hold full time positions. It is interesting that the data show slightly higher numbers of mothers than fathers working in clerical and sales positions. This may reflect the mothers' higher

educational levels. These family characteristics are representative of the total preschool Get Set population as determined by comparison with demographic information records of the Board of Education.

The Denver Developmental Screening Test

The instrument chosen for evaluation of developmental functioning was the Denver Developmental Screening Test (DDST)[7], a technique used for the developmental assessment of babies and young children. This test was originated and standardized in Denver, Colorado. The standardization population was primarily (82%) from middle class and upper class social groupings. Of the total population in the Denver study, 7% were Negro children.

The test items are grouped within categories assessing various abilities: Gross Motor, Fine Motor Adaptive, Language Functioning and Personal Social Functioning. Included in the Gross Motor area are test items which permit evaluation of coordination and balance, e.g., catching a ball, balancing on one foot, and hopping. Test items within the Fine Motor Adaptive section allow assessments of visual-motor coordination and perception, e.g., building with blocks and drawing of geometric shapes and human figures. The test items within the Language category call upon the child's understanding of the meaning and use of words. The test items included within the Personal-Social area require an

adult's report concerning a child's ability. This area of functioning was not explored in the present study.

The medical students were trained in the techniques of examination and evaluation of the children.* In order to establish reliability among examiners, each examiner tested twelve children in common with every other examiner. The percent of agreement on items passed or failed ranged from 85% to 92%.

Behavioral Inventory

A behavioral inventory was designed to describe the child's behavior in the testing situation. Judgments were made in the following behavioral categories: 1) Reactions on initial contact. 2) Adaptability to the situation. 3) Quality of affective behavior. 4) Attention to tasks. 5) Frustration behavior. 6) Verbal behavior. 7) Competency behavior. Criteria were developed for rating and reliability established. The agreement among four raters was 87%.

In addition to establishing reliability of judgments in the testing situation, the authors were interested in assessing the congruence of behavior in the testing situation with the child's behavior in the classroom. Therefore, three

*Training in the use of the DDST was supervised by the senior author.

experienced psychologists observed thirty children in free play periods in their classrooms.* Utilizing parallel Behavioral Inventory Forms, the psychologists' judgments were compared with the examiner's evaluations for the children during the developmental testing session. Correlation coefficients between the classroom observers and the examiner's judgments were .85; .73; .83; .84. On the basis of these results, the behavior of the children as observed in testing would appear to be a reliable sample of behavior in the classroom.

RESULTS

Denver Developmental Screening Test

Comparisons of test results of the study population with the Denver sample are presented in Tables II, III, IV. The asterisks point out areas in which the study children lag behind the Denver group. For example, on "Copies a Cross" (Fine-Motor Adaptive item), 71% of the study children in age group 4.1 to 4.5 passed. By comparison with the Denver

*Appreciation is expressed to Robert Stephanos and Ruth Salven (Follow Through Program, School District of Philadelphia) for their assistance.

population, we would expect 90% of the children to pass the item by age 4.4. The data, however, would be more comparable to the results for Denver children age 3.8, where 75% of children were successful on this task.

Utilizing the criteria established by the authors of the DDST, the results of performance in each section of the test (Gross Motor; Fine Motor Adaptive; Language) was rated as "normal", "questionable" or "abnormal". Because the number of children in the lower (36-42 months) and upper (+66 months) age groups are limited, these results were not included. The data presented in Table V are for 358 children between ages 43 to 66 months.

TABLE II

GROSS MOTOR

STUDY NORMS COMPARED WITH DENVER NORMS

	(% Passing by Age) Denver Norms				(% Passing by Age Groups) Study Norms			
	25%	50%	75%	90%	3.5-4.0	4.1-4.5	4.6-5.0	5.1-5.5
Balances on 1 ft., 1 sec.				3.2		90%	90%	90%
Broad Jump				3.2		90	90	90
Balance on 1 ft., 5 sec.				4.3		68*	78*	88*
Hops on 1 ft.			4.0	4.9		67	90	90
Heel to toe walk			4.2	5.0		56*	67*	74*
Catches bounced ball	3.5	3.9	4.9	5.5	42	61	74	83
Backward heel-toe	3.9	4.7	5.6	6.3		13*	21*	30*
Balance on 1 ft., 10 sec.		4.0	5.0	5.9		40*	41*	52*

TABLE III

FINE MOTOR ADAPTIVE

STUDY NORMS COMPARED WITH DENVER NORMS

	(% Passing by Age) Denver Norms				(% Passing by Age Groups) Study Norms			
	25%	50%	75%	90%	3.5-4.0	4.1-4.5	4.6-5.0	5.1-5.5
Tower of 8 cubes				3.4	90+	90+	90+	90+
Copies circle				3.3	81	90	90	90
Imitates bridge				3.4	90	90	90	90
Picks longer line (3 of 3)			3.4	4.4	76	79*	90	90
Copies cross (+)		3.4	3.8	4.4	64	71*	90	90+
Draws man (3 parts)	3.5	4.1	4.7	5.2	58	63	71	87
Imitates Square (demons.)	3.5	4.1	4.7	5.7	30	48	72	83
Copies Square	4.1	4.7	5.5	6.0		24	40	56*
Draws Man (6 parts)	4.6	4.8	5.4	6.0		30	40	57*

TABLE IV

LANGUAGE

STUDY NORMS COMPARED WITH DENVER NORMS

	(% Passing by Age) Denver Norms				(% Passing by Age Groups) Study Norms			
	25%	50%	75%	90%	3.5-4.0	4.1-4.5	4.6-5.0	5.1-5.5
Uses Plurals				3.2	87%	90%	90%	90%
Gives first & last name			3.2	3.8	81	90	90	90
Comprehends cold, tired, hungry			3.5	4.1	74	90	90	90
Comprehends 3 prepositions			3.4	4.5	85	87	90	90
Recognizes 3 colors			3.7	4.9	38*	48*	71*	81*
Opposite analogies (2 of 3)		3.2	4.8	5.3	57	71	83	90
Defines 6 words (Denver test)	3.4	4.8	6.1	6.3	8*	32*	33*	49*
Composition of shoe, spoon door	3.9	4.9	5.7	6.3	0*	5*	6*	11*

TABLE V

Distribution of Children's Overall Rating for DDST Category by Age Group (N=358)

	43-48	%	49-54	%	55-60	%	61-66	%	TOTAL	%
GROSS MOTOR										
Normal	38	72	68	86	95	81	75	69	276	77
Questionable	15	28	10	13	21	18	31	28	77	22
Abnormal	0	0	1	1	1	1	3	3	5	1
FINE MOTOR										
Normal	35	66	55	70	88	75	90	83	268	75
Questionable	16	30	20	25	27	23	18	16	81	23
Abnormal	2	4	4	5	2	2	1	1	9	3
LANGUAGE										
Normal	39	74	66	84	86	74	77	78	268	75
Questionable	13	25	11	14	27	23	30	20	81	23
Abnormal	1	1	2	2	4	3	2	2	9	3

The results were rated as "normal" - 22% as "questionable"; 1% as "abnormal". The results of testing in Fine-Motor Adaptive functioning show 75% of the children rated as "normal " 23% as "questionable"; 3% as "abnormal". Ratings of the children in Language functioning show that 75% were judged as "normal" 23% as "questionable" , 3% as "abnormal".

Individual items were studied in order to assess the relationship between performance on an item (pass, fail, no response) and the total performance on the test (normal, questionable, abnormal). In the Gross Motor section, difficulty with balancing skills was noted in the study population. Analysis of the items indicate that certain failures represent a lag for the whole group. That is, they do not discriminate "normal" children from "abnormal" or "questionable" children. Failure to balance on one foot for five and ten seconds appears to represent this kind of group deficit. However, other item failures appear to be highly discriminatory.

In the upper age group (5.1 to 5.5 years) failure to catch a bounced ball or to do a "heel to toe" walk point to individual rather than group deficits.

Analysis of results in the Fine Motor Adaptive category show that failures to "pick the longer line", "copy a cross" and "copy a square" represent group lags for this population. These items do not discriminate "normal" from "questionable" or "abnormal" children. However, in the upper age group, (5.1 to 5.5 years) "draw a man of six parts" was failed more often by those judged "questionable" or "abnormal". Thus, it emerged as a discriminatory item within the study population.

Within the Language test category, the three test items ("recognizes three colors", "defines six words",

"composition of shoe, spoon, door") which show age lags in successful responses do not discriminate "normal" from "questionable" or "abnormal" children.

As noted in Table VI, the children had experienced varied lengths of time in the pre-school program. To assess the relationship between test performance and amount of time in the pre-schcol program, the data was analyzed for the two upper age groups (55-60 months; 61-66 months) who had been in the pre-school program from 6-12 months and 12-24 months. These categories show the largest groupings within the total study population.

TABLE VI

Length of Time in Pre-School for each Age Group

Age Group of Children (Mo.)	Length of Time in Program in Months			
	0-6	6-12	12-24	+24
36-42	8	3	1	0
43-48	10	38	1	4
49-54	7	65	4	3
55-60	11	66	38	2
61-66	6	60	41	2
Over 66	0	3	0	0
Totals (373)	42	235	85	11
Percent	11	63	23	3

The results show no significant relationships between test responses and length of time in a pre-school program. In the Gross Motor category, only 11% of the children who had been in the program over one year show improved responses as compared with the same age groups in the program for less than one year. Findings were similar in the area of Fine Motor Adaptive functioning (10-19% improvement) for both age groups. In Language functioning the results follow the same pattern (1-11% improvement).

Analysis of the findings from the Behavioral Inventory show that the children generally demonstrated age-appropriate behavior during testing. In all categories of the inventory, over 85% of the children showed positive test-related actions in the testing situation.

Discussion of Results:

In general, the study children performed similarly to the normative expectancies of the screening test. The specific test items on which the study children performed poorly suggest group developmental lags in a variety of tasks. (Analysis of the items failed by the "normal", "questionable" and "abnormal" children do not show a consistent pattern of item failures). Analysis of the items failed by the "questionable" children shows a consistent pattern of failures in response to those tasks on

which group lags are found. The ratings of "abnormal" were almost completely based upon a consistent pattern of "refusals" to respond to the test items. These children's behavior ratings in the test period reflected atypical reactions to the total test situation. In age group 5.1-5.5 months, the "questionable" and "abnormal" children failed "Draw a man of six parts", "Catch a Bounced Ball" and "Heel to Toe Walk" (Forward and Backward) more often than do their "normal" peers.

In order to approach a meaningful understanding of these findings, an examination of those test items on which the study population show developmental lags, suggests that the deficits cannot be attributed solely to cultural deprivation. The response failures of the preschool population suggest that other causative factors may account for the developmental "lags".

In the Gross Motor functioning items, the children experience difficulty in carrying out actions requiring voluntary inhibition of motor behavior (e.g., "balance on one foot", "Heel-Toe Walk"). Observation of older children with neurological impairment indicates that these children are deficient in their ability to exert voluntary control.[2] As 22% of the study population were rated "questionable" in Gross Motor functioning, it would be important to question whether these early failures may be related to neurologically

based disabilities in individual children among the group. In the present study, it would be difficult to explain failures on these items on the basis of poor motivation to perform. The children were no less interested in responding to these tasks than they were to other task requests. The Fine-Motor Adaptive items in which noticeable developmental lags occur are tasks where the child is expected to reproduce an accurate response to a stimulus (..g.,"Copies a Square", "Copies a Cross"). Further, the deficit is apparent in the examination task which is relatively unstructured, (e.g., Copies a square without demonstration). Observation of school-age children with neurological impairment reveals that deficits in perceptual functioning are apparent when task demands are less defined. However, when the method of task presentation is more structured, the deficits are not observed. It is possible that among the pre-school children who failed these items, a considerable number may present with primary neurological dysfunction. The additional failures of children to "Draw a Man of six parts" lends support to the possibility of learning disorders among the study children. Research evidence in studies of the human figure drawings of middle-class Kindergarten children suggests that the drawings are primarily related to maturation rather than to school learning.[9] Analysis of the drawing productions of the study children similarly yield no differences related to the amount of time in preschool programs.

Preliminary studies of the drawings of children within the study population who were either in the "questionable" or "abnormal" group in Fine-Motor Adaptive functioning, reveal prominant malfunctioning in integrative capacity and confusion in organizing concepts.* Since the drawing test was failed more often by the "questionable" and "abnormal" group, performance on this test item may be considered of diagnostic value in the early detection of children with learning disabilities.

Since 23% of the children were "questionable" or "abnormal" in Fine Motor Adaptive functioning, those children whose test results show deficiency in this category should be considered for further examination to determine whether learning disabilities are contributing to deficient functioning and the slower rate of development.

From the findings, the only area in which there might be ready acceptance of a socio-cultural based explanation for lags in performance is in Language functioning. The study children are slower in becoming familiar with colors ("recognizes 3 colors"). However, these children have attended the pre-school programs for six months to two years

*The children's drawings have been grouped into categories: "organic", "emotional disturbance", "slow development". Follow-up studies of these children completing first grade will help to provide the information basic to early detection of young children with learning disabilities.

and it would be reasonable to expect the educational program to have had some further impact on their fund of information. The reasons for this lag are unclear and require further study.

Turning to an examination of the marked deficits in defining words ("Defines six words"), it is apparent that a number of words in this test item are unfamiliar to the disadvantaged urban child. The specific words failed most often were: "lake", "pavement", "hedge". Failure on these words grew to be expected by the examiners because of the prevalence of "I don't know" responses to them. In addition, since eight word definitions comprise the test (with six required for success), the child's failures on three words equalled total failure on this language test item. Research evidence suggests that low frequency words (those heard less often) are poorly utilized by the disadvantaged child as compared to the suburban child.[4] In the screening test, it is suggested that the following words be substituted in testing disadvantaged city children: "river", "sidewalk", "bush".*

The test item "Composition of Shoe, Spoon, Door" was almost completely beyond the understanding of the children. When asked "What is a shoe made of?", the children's responses

*It has been subsequently observed that these substitutions are readily understood and successfully defined by pre-schoolers in the nursery programs.

reflect either unfamiliarity with properties of objects or with the structure of the question. Common responses were, "Mommy bought shoes for me", "Shoes are on my feet", etc. These experiential associative responses suggest that the child's subculture has not provided the auditory experiences necessary for recognition of these concepts.*

*Subsequent use of this section of the DDST has shown that restructuring of the question to "What is a show made out of?" yields more frequent correct responses. This suggests that the item is not appropriately structured. The interested reader is referred to the works of Noam Chomsky, Laura Lee and others in psycholinguistics.

Conclusions

The present study points to the necessity for developing preschool classes in which the educational program is determined by the needs of the children it serves. Through the use of a developmental screening test, the possibility exists for early detection and remediation of learning disorders among preschool children. The impact of preschool urban programs could be increased if the approach to curriculum were based on a re-evaluation of the a priori hypothesis which assumes that deficient functioning is only caused by cultural deprivation.

BIBLIOGRAPHY

1. Bernstein, B.: 1962. Social Class, Linguistic Codes and Grammatical Elements, in Language and Speech, 5, 221-240.

2. Cohen, H., Taft, L., Mahadevich, M., Birch, H.: 1967. Developmental Changes in Overflow in Normal and Aberrantly Functioning Children. Journal of Pediatrics 71: 39-47.

3. Deutch, M.: 1965. The Role of Social Class in Language Development and Cognition. Americal Journal of Orthopsychiatry, 35: 78-88.

4. Entwistle, Doris R.: 1968. Developmental Sociolinguistics. American Journal of Sociology, Vol. 74, No. 1, 37-49.

5. Frankenburg, W.K., Dodds, J.B.: 1967. The Denver Developmental Screening Test, Journal of Pediatrics, 71:181-191.

6. Frankenburg, W.K., Dodds, J.B.: 1969. The Denver Developmental Screening Test Manual, 7-12.

7. Jensen, A.: 1966. Cumulative Deficit Compensatory Education, Journal of School Psychology, 4:137-147.

8. Jerrell, Durken, Wiesky: 1959. Social Class and the Nature of the Incentive in Discrimination Learning, Journal of Abnormal and Social Psychology, 59, 270-272.

BIBLIOGRAPHY (continued)

9. Koppitz, E.M.: 1968. Psychological Evaluations of Children's Human Figure Drawings, Grune and Stratton, New York.

10. Resnick, Robert J.: 1969. A Developmental and Socio-economic Evaluation of Perceptual Integration, in Developmental Psychology, Vol. 1, No. 6, 691-696.

11. Ziegler, Edward, Butterfield, Earl C.: 1969. Motivational Aspects of Changes in I.Q. Test Performance of Culturally Deprived Nursery School Children. In Annual Progress in Child Psychiatry and Child Development, Eds. Chess and Thomas.