

1929

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### Recommended Citation

Vance, Thomas F. and Grandprey, Medora (1929) "The Evaluation of the Musical Capacity of Nursery School Children," *Proceedings of the Iowa Academy of Science*, 36(1), 321-328.

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## THE EVALUATION OF THE MUSICAL CAPACITY OF NURSERY SCHOOL CHILDREN

THOMAS F. VANCE AND MEDORA GRANDPREY

The elements in the situation which focused attention upon the possibility of evaluating the musical capacity of nursery school children by a method which might have some approach to reliability were three-fold: an enrollment of thirty-one children, a number of which were almost invariably eager for and interested in the musical phase of the nursery school program; a teacher whose musical ability was considerably above the average, with a professional interest in a problem of this kind; and a psychologist on the staff also interested in the problem.

Certain considerations had, of necessity, to be taken into account in outlining the project. The nursery school at the Iowa State College exists primarily as a laboratory for students in Home Economics. Whatever plan might be adopted must not interfere with the educational program either of the children themselves or of the college students.

Out of these two limitations, which the situation inherently forces, an important question arises to which the results of this study may give a partial answer; namely, the potential contribution of the nursery school teaching laboratory to the science of child psychology.

The immaturity of nursery school children is an ever present consideration in planning a work of this character. In fact were it not for the child's mental immaturity there would have been no point to the project which is being reported. The children would have been rated on their musical capacity according to the Seashore tests. Any device to have any value in determining a child's musical capacity must be exceeding concrete, must hold his interest and must be within his attention span.

The devices or tests to be described approximate these qualifications. They were concrete, they interested the children, and they were of short duration. They were as follows:

1. Response to music introduced when they were engaged in other spontaneous interests.
2. Response to music played during the regular music period when they

received some encouragement to take part in it. In both instances the child was responding as a member of the group. In the remaining tests the child was alone with the teacher.

3. General response to music played on the victrola.
4. Beating time to victrola music with the triangle.
5. Imitating the nursery school teacher in singing an interval.
6. Imitating the nursery school teacher in beating rhythmical patterns on the triangle.
7. Finally all the children were rated on the basis of the musical aspect of the home environment.

*Table I — Correlations — Nursery School*

	1	2	3	4	5	6	7
1							
2	.33-.12						
3		.37-.11					
4		.28-.11	.05-.12				
5	-.11-.12	.39-.10	.24-.11	.29-.11			
6	.12-.12	-.13-.12	.26-.11	-.12-.12	.26-.11		
7	-.04-.15	.28-.13	.20-.14	.19-.14	.09-.15	.28-.13	
8	.21-.13	.41-.12	.40-.11	.62-.09	.20-.14	.43-.12	.52-.11
1	I.Q.			5 Time			
2	Rhythm			6 Interpretation			
3	Age			7 Tone			
4	Home Environment			8 Responsiveness			

The observations for responsiveness, Test Nos. 1 and 2, were made on a carefully prepared blank by a student-assistant who knew the children well. They were made two or three days a week for a period of six weeks. A stenographic record was taken for eight different periods. The ratings were based on responses shown through the entire period. A child could be scored as high as five for each of three tests, response while playing, presence in the circle and response in the circle, with the possibility of a total score of 15.

When the victrola music was used as a stimulus the teacher simply said to the child, "I have some new records and I thought you would like to hear them." The record was then placed on the machine and the child encouraged to start the machine. The needle was placed in position by the teacher. The teacher then said: "Now, see what you can do to that music." Opportunity for three different responses to each selection was allowed before going to the next record but in each case the only encouragement from the teacher was the question: "What can you do to that music?" For no response the score was 0; for verbal response, 1; movement of parts of the body, 2; movement of the whole body, 3; response appropriate to type of selection, 4.

In the phase of the test where the child played the accompaniment to the victrola, a plus was recorded for each measure of four

beats each of the march and the skip rhythms and for each measure of three beats each of the waltz. The skip and march were each sixteen measures in length and the waltz thirty-two measures. The records were Victor 20525 B, 20736 A, and 35774 B.

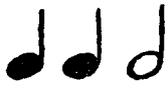
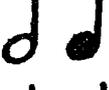
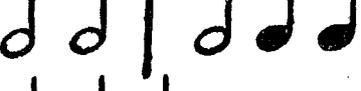
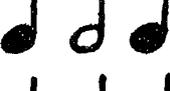
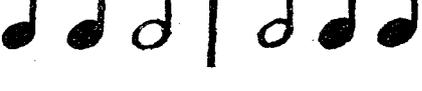
Best results in the singing tests were obtained when it appeared to the children to be a part of the nursery school program. At the close of the rest period the name of each child was sung, one by one, with the instruction, "Roll up your rug." Their names were then sung at the close of the rest period with the direction "Jimmie, you may roll up your rug," assuming Jimmie to be the first child called. As Jimmie received his direction he would put his rug away and join the teacher at the piano. Another child would then be called, Jimmie following the teacher in singing the name of the second child, and so on, until all had had their turn. Both ascending and descending intervals were used. Credit was given for responses as follows: Sang one note but off pitch, 1; sang an interval as demonstrated but off pitch, 2; sang an interval of approximate pitch but not on pitch, 3; sang the interval, one note on pitch, 4; sang the interval exactly, 5.

Imitating the nursery school teacher in beating rhythmic patterns on the triangle made the nearest approach to the conventional test situation of any in the series. The patterns themselves, the arrangement, the method of presentation and of scoring, which were finally used, were evolved after a rather extended tryout with a three and one-half year old non-nursery school child, a child in the kindergarten, twenty-one kindergarten children, six kindergarten children, and fifty-nine kindergarten children. There was, however, so little change in the technique of the test after giving it to the fifty-nine kindergarten children that these results may be compared with those obtained from our thirty-one nursery school children who were given the test the last of all.

The triangle was selected from the other band and orchestral instruments used in the nursery school for several reasons. It was one of the favorite instruments which was played daily in the nursery school by the children themselves. It was given preference to the xylophone because of its constant pitch; to the cymbals, because it could be manipulated more easily; and to the tambourine, because it offered fewer possibilities for variety in playing.

The method of presenting the problem to the children was as follows: Immediately before the child was brought in to be tested, the teacher checked her tempo with the beat of the metronome which was turned off before calling the child in. When the child

Table II — Rhythmic Patterns

C2		49
B3		49
C7		23
C17		13
C11		7
C6		6
C12		5
C5		7
C3		7
B2		3
C8		8
C4		1
C13		0

came in the teacher began talking about the triangle and showed the child how to hold it. She would grasp it at one of the angles and say, "This is the way I hold it when I play it." Then she would have the child practice taking it, helping him to adjust his fingers to the proper position. In playing she was careful to look at the triangle and to strike it in approximately the same place. She then said, "I am going to play some little tunes on the triangle. Then you will play them and make them sound just as I do. Listen." Immediately following, the pattern was played and the triangle and bar placed in the child's hands. "Now, make it sound just as I did," was repeated after the presentation of the first pattern and as frequently afterwards as seemed advisable to keep the attention of the child on the problem in mind.

A response was scored as successful when the child reproduced a pattern once, provided the playing showed a difference of long and short notes in the order presented in the pattern, regardless of accent and volume. If played once in conformity to this standard, the score was counted as 1, if played twice, 2; if three times, 3; and if four times, 4. The child was given ample time to play the pattern four times before the record was made on a prepared blank.

Thirty-six patterns were originally selected from a number of melodies found in a book of songs for young children. In the evolution of the test they were reduced to thirteen as they appear in Table II.

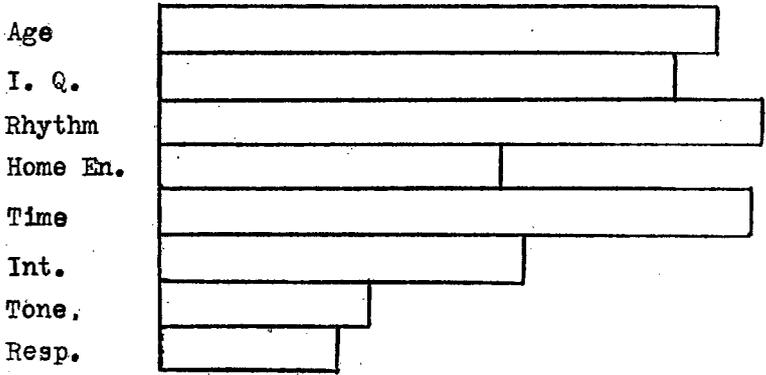
To get a rating on the home environment of the nursery school children as it pertained to music, the teacher went into the home of the thirty-one nursery school children with a prepared form which she filled out by the method of direct questioning. The form carried questions relative to the provision for musical impression and expression in the home and the musical training and experience in the home and the musical training and experience of the parents. Scores were given on a basis of from 1 to 5 credits on each of the following: instruments in the home, singing, training of parents in music and later experience of parents in music.

The limitations of this paper do not permit giving the results in full. The development of methods of determining special aptitudes of young children is at present more important than results. The tables and graphs which accompany may be taken as samples.

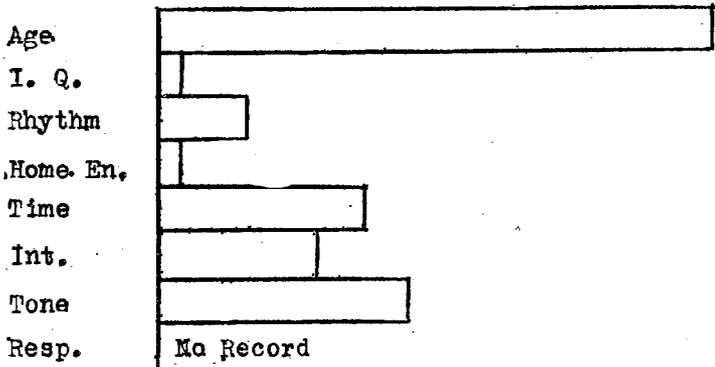
Graph I, giving a comparative picture of two children of the same age, is suggestive of the amount of individual differences in reaction to the various test situations. Whether the assumption that the one child has greater musical capacity than the other is true,

Graph I—Individual Comparisons

0 2 4 6 8 10 12 14 16 18 20 22 24 26



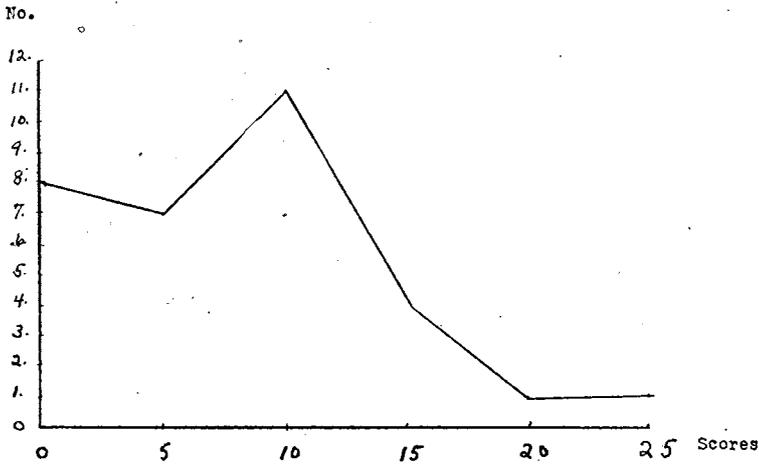
0 2 4 6 8 10 12 14 16 18 20 22 24



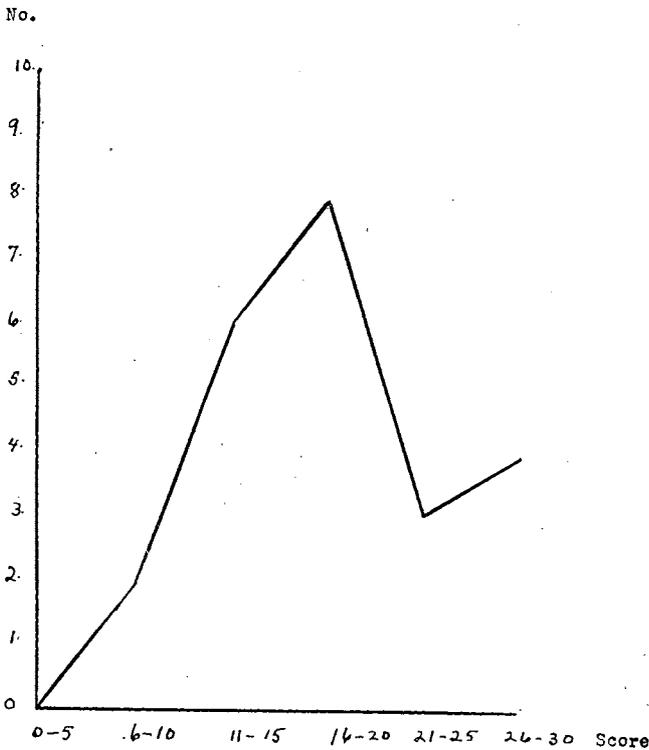
can only be determined by a study of the child some ten or fifteen years later. There then will be the possibility of correlating the results of our work in the nursery school with the results of the Seashore tests. With this in view all of our nursery school children are being put through this series, that sufficient data will be available to make correlations significant.

Graphs II and III seem to show that the two tests which they represent are better adapted to the older children than to the younger. The smaller number in the singing test is due to the fact that the younger children could not be induced to sing. They did do something with the rhythm test but eight of them not enough to get a score of more than a zero. We are no longer giving the

Graph II — Rhythmic Patterns



Graph III — Interval Singing



tests to the children at the two to three year level. In the rhythm test the median for the kindergarten children was 14.8; for the four to five year level, 8.84; the three to four year level, 4.18; and for the two to three year level, 2.43. Further, the correlation of rhythm with age in the kindergarten was .03 while in the nursery school it went as high as .37. To give any test of special aptitude too early may give merely a measure of maturity and not of the aptitude in question.

The highest correlation to be found in Table I is between responsiveness and home environment, an  $r$ . of .62. It may suggest a possible carry over of musical expression in the home to expression in the nursery school, making perhaps some slight allowance for inheritance.

One or two by-products seem to have something more than passing interest. In the singing test the average scores for the descending intervals are higher than those for the ascending intervals. The descending intervals were also lower in pitch. The question arises, would this difference still obtain if pitch were held constant and a much larger number of cases studied?

In the rhythm test the patterns in which the quarter notes preceded the half notes received higher scores than those of the reverse order. This difference obtained in both the kindergarten and the nursery school groups. It has been suggested that this might help to explain the appeal of jazz in which this type of rhythm predominates.

Taken as a whole, the study may be used as an illustration of the use of the nursery school as a teaching laboratory, as differentiated from a research laboratory, for securing data which may prove of scientific as well as practical value. Practical results certainly accrue in the stimulation of the interest of the nursery school staff to secure as reliable information as possible about the children. Only the future can determine the scientific value of such a study.

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