MUSIC TRAINING FOR PRE-SCHOOL CHILDREN

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MUSIC TRAINING FOR PRE-SCHOOL CHILDREN

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INTRODUCTION

Twelve and one-half million children under the age of six were living in the United States in 1940. This number constituted almost ten per cent of the entire population and means that every tenth person is a pre-school child. In recent decades the proportion of pre-school children has been diminishing while the proportion of aging and elderly adults has been increasing. Except for the temporary halt in the decline caused by the birth of a bumper crop of wartime and post-war babies, this trend is expected to continue. The Bureau of the Census in its Statistical Abstract for 1947 estimates that within the next fifty years the number of pre-school children will have fallen off almost a million with a corresponding decrease in the proportion of pre-school children to the total population. This populational trend augments the importance of the pre-school child. At the same time, the education of the large numbers of wartime and post-war babies offers a challenge of immediate concern.

It has long been felt that there should be an "upward" trend in education but until recent years little thought has been given to the possibility of a "downward" trend which would provide education for the pre-school child.

As citizens, we must become sufficiently aware of the importance of the early years in relation to mental

development. Then we must discriminate as to what type of training can be given to advantage at the pre-school level and what types are best deferred until the normal processes of growth makes training opportune.

The purpose of this study was to determine if music training for pre-school children would be a worthwhile and desirable activity. If it were found to be the case, a second purpose was to suggest a program of music training which would be of maximum educational effectiveness.

Pre-school children are our future citizens and we should make every possible effort to insure the quality of their citizenship. Parents and educators are rapidly becoming convinced of the importance and feasibility of pre-school education and the next fifty years should witness a definite "downward" trend in education for pre-school children to the benefit of all mankind.

DEVELOPMENT OF PRE-SCHOOL EDUCATION

The extent of modern interest in the welfare and guidance of pre-school children is reflected in the many provisions for the physical care, mental hygiene and educational guidance of young children. Child-protective laws have been passed; clinics and welfare stations have been established; child-study clubs have been formed; a kindergarten-nursery school movement is rapidly gaining momentum.

The new attitude first recognized the fact that physical care alone would not insure normal development of children. Consequently, an increasing amount of attention has been focused upon the problems of mental hygiene and educational guidance. Modern libraries are endeavoring to interest young children and to direct their activities by the provision of play corners and dramatization or story hours. The playground movement has taken cognizance of the importance of organized play, now regarded not as an aimless expenditure of physical energy but as an activity which through the provision of appropriate materials and opportunities can be directed into valuable and worthwhile channels.

The organization of child-study clubs everywhere reflects the serious desire on the part of parents to be informed concerning the various phases of child development and to prepare themselves to administer the guidance children must have if they are to develop into useful citizens.

Many of them, too, are endeavoring to secure for their children the benefits of socialized activity found in educational play groups.

Colleges and universities are offering courses in child care and development and many have established nursery schools for the purpose of providing an environment for the practical training of students or for the controlled research of psychologists. An increasing number of elementary schools are offering the advantages of kindergarten training.

Prior to 1920 nearly all provisions made for child care and training were based upon haphazard or "common sense" methods. These methods had evolved from the unsystematized observations of parents, teachers, nurses and physicians. The importance of systematized training was first recognized by Comenius, the Czechoslovakian reformer, in the early part of the seventeenth century. In his book entitled "School for Infancy" he claimed that young children could be easily led in the formation of good habits, but that once formed, habits were not easily altered. As a part of his system of education, he therefore included training in the home where children from infancy up to the age of six years were to be guided in habit formation, trained in language expression, and given some understanding of the common world about them. Emphasis upon physical education and activity foreshadowed the best thought of almost three centuries later.

John Locke, the English philosopher, in the latter part of the seventeenth century stressed the importance of using psychological methods in preference to harsh disciplinary methods in common use. His discussion foreshadowed the psychological and biological point of view characteristic of educational theory of the nineteenth century.

The importance of studying the child himself and adopting a course of training consistent with normal development was first advocated by Rousseau, the French philosopher, in a work published in 1762. His book was followed by a long list of treatises on the development of the child, all of which were based more or less upon observation. Rousseau's doctrines of naturalism eventually spread to Germany, where Basedow understood in a measure the instincts and interests of young children and allowed them free development in his school. Pestalotti also believed that education should aid the natural growth of the child's powers, and advocated the use of concrete materials and situations in child training in contrast to mere verbal instruction.

Froebel, the German educator, was the first to formulate a comprehensive theory of pre-school education and he also compiled a detailed method of its enactment. His book, "Education of Man", amplified some of the ideas of Comenius and further advocated the doctrine of naturalism introduced by Rousseau. In 1837, Froebel established in Germany a school for children between the ages of three

and seven years, which he called the Kindergarten. Stress was placed on motor activity as a means of learning and on the social aspects of coöperative play.

The Kindergarten movement failed to gain a footing in Germany because of government suspicion of its political influence. The idea spread to France, however, where the first nursery school (école maternelle) was established at Walbach. In England the Industrial Revolution and the accompanying breakdown of the family unit as mothers were drawn from the homes for work in factories, led to the establishment of Charity Schools in 1699. These were the earliest attempts to educate pre-school children through organized community effort. Moral training was stressed in these schools; discipline was strict; health standards received but little attention; intellectual training of unsuitable character and amount was given and no mention was made of music training. Increase in size and number of cities paralleled the industrial development and further augmented the condition detrimental to normal childhood.

The need for a downward extension of public education was recognized by Lord Henry Brougham in the following speech delivered before the House of Lords in 1835:

> "I consider the establishment of infant schools one of the most important improvements...in the civil policy of this country...Whoever knows the habits of children at an earlier age than that of six or seven, the age at which they generally attend the infant schools, is well aware of their capacity to receive instruction long before the age of six...The truth is that the child can and does learn a great deal more before that age than all he ever learns or can learn in all his after life. His attention is more easily aroused...

> his memory is more retentive...bad habits are not yet formed nor is his judgment warped by unfair bias...Good habits may be easily formed ...More would really be superfluous upon the general advantages of infant schools. I will only add that in France as in this country the most sanguine hopes are entertained by all parties of the benefits to be derived from their establishment."[1]

In 1903 the British Board of Education recommended the establishment of public nursery schools and many are in existence at the present time.

In America the development of pre-school education grew out of the establishment of church schools, infant schools, day nurseries and kindergartens and later fused with the nursery school movement. Hildrespin, in the Journal of Education in 1836, predicted that in view of their obvious values nursery schools would soon spread to every corner of the land. As it turned out several other major movements in American education were to run their courses first.

In this country, as in Europe, the employment of mothers for reasons of economic necessity, or lack of absorbing activities in the home, or the desire to contribute to society has caused a similar breakdown in family life and has been one of the chief causes for the spread of the nursery school movement. As yet the speed or the extent of the movement cannot be predicted. The principal factors in favor of the movement assuming national importance are the logical extension downward of public education,

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1. Brougham, Lord Henry, Education of the People, May 21, 1835.

the recognition of changed home conditions and the complexity of child development and behavior. Educators are agreed upon the following advantages and opportunities offered by the nursery school: fundamental behavior patterns are set up; play facilities usually unavailable are provided in combination with expert supervision of the activity; opportunity for the development of social skills are given; health and nutrition receive careful attention, and early expressions in art, music and literary composition are encouraged.

The beginnings of experimental and objective study were assured when psychologists discovered in the preschool child an interesting subject for scientific research. The germ of much of the later experimental work was contained in a book entitled "Mental Development in the Child and the Race" which was written by J. Mark Baldwin in the early part of the twentieth century. The triumph of the experimental method of research has greatly modified and enriched our conception of the developmental processes and has furnished enlightenment regarding the effects of training during the first years of childhood.

Establishment of research centers for scientific work in child development and guidance progressed slowly at the beginning of the century. It was difficult, at first, to secure suitable subjects and it was not always possible to control experimental conditions. The Nursery School Experiment organized in New York City by the Bureau of Educational Experiments was a pioneering venture. Shortly thereafter

nursery schools and child welfare centers were organized at the Merrill Palmer School in Detroit, the Universities of Iowa, Yale, Columbia and Minnesota, and many other places. The scope of the research conducted has been in accordance with the purposes for which the schools were organized and the abilities and interests of the teachers and psychologists placed in charge. Many studies concerning the various phases of the physical, mental, social and aesthetic development of pre-school children have already been made; additional studies are in progress and still other challenging subjects for scientific research remain unexplored.

In reviewing the results of studies made so far in the field of pre-school education one conclusion seems to stand out clearly: the policy of allowing the child to "just grow" into conventional school age must give away to a definite program of training designed to awaken wholesome interests and attitudes.

THE CHILD'S NEED FOR MUSIC

Music is as old as the world itself. It is everywhere about us. In nature and in human life we see evidence of its presence. It is a vital source of life, health, strength and happiness. Man has realized his need of music from the earliest times and has not only made music but has developed an art as well. Down through the ages music has become more and more significant in the lives of men until the present day, when the advantages of musical understanding and appreciation are recognized by all. The child's need for music has been summarized by Dr. Satis Coleman, music educator, as follows:

> "Your child will need music all his life. From infancy, through all the stages of growth, and through the years of maturity and old age, he will need the soothing qualities of music and its power to relax his tensions and quiet his nerves. He will need the music of others, but most of all he will need his own musical expression. He will need the creative pleasure which music-making will bring him, the satisfaction of accomplishment and the realization of his power in producing it. He will need the gratification of his sense of beauty and the development of his aesthetic taste which the making of good music will cultivate in him."[2]

Music study has definitely been accepted as essential in a well-rounded education, for it provides values which no other course of training can give. It calls for a mentally alert mind; for concentration and recall, and for accuracy in performance. It is a dominant force in

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2. Coleman, Satis, Your Child's Music, The John Day Co., New York, 1939.

the building of character, for it fosters the realization that nothing worthwhile is accomplished without sacrifice and hard work and that the greatest talent one can have is the talent for persistent work. It is unexcelled for teaching discipline and the importance of coöperation. When a child has learned to enjoy working with others for the good of the group, as he must do in music, he has learned one of life's most important lessons.

The potential value of music training in the guidance of problem children has long been realized by sociologists. Music training is an organized opportunity for aesthetic and emotional experiences. Plato claimed it to be a tonic which accomplishes for the mind what the gymnasium does for the body. It provides for an increasing awareness, interest and insight regarding music. The claim that music should be studied for the mental training it provides is now regarded as an error in doctrine. Similarly regarded is the doctrine which glorified the acquisition of technique and knowledge about music rather than experience with it. Modern psychologists hold that music should give pleasure and satisfaction and at the same time provide a vehicle for universal expression.

Music training is an organized opportunity for social experiences. It is a pursuit available to most persons. It is a pursuit available in a variety of significant social situations. Very young children are inherently anti-social, and music is one of the best means for encouraging them to enter group situations and become participating members.

A child's energy is boundless and he needs interesting and entertaining diversions on which to expend this energy. Music training fills this need, keeping active minds and eager fingers busy at engrossing tasks which will pay dividends in happiness and companionship throughout life. Music further provides a means for making friends and it fills in leisure hours when one would otherwise be alone. Music-making develops physical co-ordination and control and enables a child to move and act with a minimum of effort and exhaustion.

Music often unifies a people. Five hundred years before the birth of Christ, Confucius, the Chinese philosopher, declared that when music and courtesy were better understood and appreciated, there would be no more war. Longfellow, the American poet, declared that music was the universal language among races, recognizing no creed, no nationality and no caste. Music may be understood by all: young and old, rich and poor, educated and uneducated. It has further been claimed that the more music men hear the better they think, and the better they think the less they fight, and the less they fight, the nearer they approach civilization.

When it is deemed so vital to a well-rounded life, we should avail ourselves of every opportunity to make and listen to music. It would seem sensible too for every child to be initiated early into the joys of music making. If some activity must be crowded out in the complexity of modern living, whether for lack of time or money, it should

not be music. The further our civilization advances in science, the more we need to keep in balance, and music is the greatest of all balancers. It should be the aim of educators the country over to offer the advantages of music training to every child, and in turn to have every child an active participant in the music program.

THE NATURE OF THE PRE-SCHOOL CHILD

The pre-school age is the most wondrous and most fascinating age of man. In no other similar period of years does a person make the phenomenal growth and development which characteristics the pre-school years. All children grow and develop in accordance with the same general pattern. The average infant from birth to one year gradually gains in weight and height and learns first to lift his head, then to sit alone and finally to stand. Similarly the average child from one to six grows and develops very much like all other children of his age. Among many other things, pre-school children learn to use their hands skillfully, to walk steadily, to run and to skip, to talk easily and to play happily with other children.

There are normally great differences in the rate at which children grow and develop, however, and the age at which they are able to do certain things. Parents must not be impatient for their child to do the same things that another child of his age can do. Nothing can be done to hurry development; it comes as the child's body matures. But parents and educators can see that nothing interferes with the unfolding of a child's powers. They can give him opportunity to develop, opportunity to make the best possible use of the capacity with which he has been endowed.

Physically, the first year witnesses a development of a child's original biological equipment. The year-old-child is a "creeper and a climber." The two-year-old child is a "run-about." Of all the pre-school years, the third one is one of the most fascinating in the growth of the child, for the three-year-old can do things as his coördination becomes more and more refined. Four is the age of "finding out," through physical exploration and by asking questions. At five to six years the child has matured in motor control and can hop, skip and turn somersaults.

In addition to the great gains in physical growth, the pre-school child makes marvelous strides in mental growth as well. As he becomes more skilled in the use of his body, the development of the nervous system which is behind all this becomes more and more apparent. Walking is an illustration of this development. Talking is another. The very young pre-school child is unable to concentrate. He runs hither and yon scattering his energies and attentions in many directions. As he grows and develops, he is better able to focus his attention until at the age of three years he will usually concentrate his attention on a few toys or activities for considerable periods of time. For the most part, he understands what is said to him and is able to obey simple commands. He shows an increasing skill in observation and is strongly imitative. His knowledge comes less and less from touch and feel and more and more from language and family

example. By the age of four he is asking innumerable questions. He is able to think for himself and acts with a purpose.

The pre-school child starts the development of his social-personal characteristics early in the second year when he becomes conscious of family relationships, personal possessions and the meaning of "no," "must" and "must not." He learns to conform to the various routines his training requires and radiates under parental approval of his actions. He wants to understand his environment and to comply with its cultural demands. This carries over as his horizon widens to include playmates and teachers. He prefers associative play. He is generally self-assured and dependable and a conforming citizen of his small world.

DEVELOPMENT OF VOCABULARY

The first sounds a child makes are nothing more than babblings that have no meaning. When certain of these sounds are repeated back to him time after time, he finally associates them with an object or a person. When he uses such a symbol (a word) for an object or experience, speech comes into being. At first, one word serves the purpose of a whole sentence. The one-word sentence is followed by a grouping of two words. The first words are added to slowly, often with periods of months during which practically no progress is made but one by one words <u>are</u> added until it becomes one of the child's greatest pleasures to put a name to things and to express his desires. Then

comes a great rush of interest during which words are added rapidly. Phrases are often learned as wholes with the child having no idea of the meaning of separate words. True sentence forming rarely occurs before the child has a vocabulary of one or two hundred words. This usually occurs during the second or third years. As a child grows older, his sentences gradually become longer and more complex.

Elizabeth Madorah Smith in her investigation of the "Development of the Sentence and the Extent of Vocabulary in Young Children"[3] has made the following observations on the development of the sentence:

1. The number of words per sentence increased with age from 1.7 at two years to 4.7 at four and one-half years.

2. Declarative sentences predominated at all ages.

3. Repetition of identical sentences decreased with age.

4. The ratio of complete to incomplete sentences was significantly greater at three and four years than at two.

5. At two years, verbs, nouns and adverbs were more frequently used than adjectives and connectives. At three to four years, verbs and pronouns were more frequently used than adjectives, articles, interjections and connectives.

6. Sentences became more complex with age.

7. The ten words most frequently used were: I, is, it, you, that, do, a, this, not and the.

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3. Smith, Elizabeth Madorah, An Investigation of the Development of the Sentence and the Extent of Vocabulary in Young Children, Iowa City: Studies in Child Welfare, Vol. III, No. 5.

In her investigation of the extent of vocabulary, Miss Smith observed that the average number of words in the vocabularies of 273 children ranged from none at eight months to 2,562 at six years. The average gain per year from two to six was 572.5. Girls had acquired a few more words than boys at two and at three years of age, but after this age there was no difference.

It follows that teachers of children must become familiar with the rate and extent of language development in order to coördinate with it other phases of child training.

DEVELOPMENTAL SEQUENCES IN MUSIC-MAKING ABILITY

Musical skill is acquired in ways similar to those used in other forms of learning. This is true whether the skill is being acquired in the use of the vocal organs or in the use of the arms, hands or fingers in the playing of a musical instrument. Always there is the stage of learning what is to be done, followed by the stage of learning the way to do it. A habit-forming stage follows with a gradual approximation of accuracy, which in turn is followed by a habit-fixing stage as the movements are repeated in a uniform manner.

Learning to sing differs from learning to talk chiefly in the number of muscles that must be coördinated and in the degree of accuracy with which they must be used. In singing, the breathing muscles must be more continously and

accurately correlated with those of the vocal organs. The vocal cords must be more specifically and accurately controlled while the tongue and lips are molding sounds. The ear reports the results of these combined movements and serves as the chief guide in perfecting and coordinating them, although visual imitation of other singers is also of some help. Motor sensations of muscular tension play a considerable part in the attainment of musical skill.

Appreciation of aesthetic experiences is well established in the life of the child before artistic expression is possible. By the time a child is eighteen months he has been responding to music for many months, but, with the exception of rhythmic expression and sound play, his creative experiences are still limited. His first artistic attempts are extremely simple ones made at random as he experiments with different media. Spontaneous humming or the singing of meaningless syllables will sometimes be heard. It will be observed that the child has the ability to produce a wide range of tones at an early age and that he has considerable control over the intensity of his voice. He seems very much aware of sounds made by bells, whistles, clocks and the like and he will respond rhythmically to their stimuli, using his entire body in the expression.

At two years of age his experimentation is still largely motor and manipulative in form, but the movements are becoming more vigorous, better defined and more complex.

At this age he is less individualistic in his artistic expressions than earlier in life. Now he is strongly imitative. He sings phrases of songs, although usually not on pitch. Some children recognize a few melodies. Children of this age enjoy using rhythmic toys and equipment such as rocking horses, swings and rocking chairs. Use of these materials frequently stimulates spontaneous singing. The same phrase may be sung over and over without pause. The children will make such rhythmic responses, as bending the knees in a bouncing motion, swinging the arms, nodding the head or tapping the feet.

At three years of age, greater control and precision in the use of artistic media is observed, with fewer random movements. Many children of this age will sing entire songs, although seldom exactly on pitch. They possess some ability in matching single tones sung to them and some will recognize a few melodies. Children are less inhibited at this age than later on, for they join singing and rhythm groups more readily. They enjoy walking, running, jumping and galloping to musical accompaniment, and they keep fairly good time to the music. They also enjoy dressing in costumes appropriate to their rhythmic activities. If given opportunity, they will experiment with musical instruments.

A child begins to use his imagination as he approaches his fourth birthday and his musical activities reflect this trait. Increased vocal control is apparent at this age.

The child is now sufficiently mature to participate in simple singing games and gains much pleasure from dramatizing songs. Sometimes he will create little songs of his own while at play.

The child becomes more serious-minded at five years and seems to possess a higher level of aspiration, which at times presents difficulties in attainment. He may become self-conscious concerning his musical ability and if so, he will prefer to concentrate his talents on more conventional subjects. When his artistic attempts have become well-organized, the child may lose some of the joys of expression, but this joyousness is replaced by a deeper satisfaction of achievement. Most of the five-year-olds can reproduce single tones accurately and many can sing short melodies on pitch. Most of them can hop, skip and dance in time to music and nearly all can synchronize hand or foot tapping with the rhythm of music.

Individual differences in ability seem to be more marked in aesthetic expression than in any other field of behavior. This is especially true of musical expression. A child of 21 months may be able to sing songs accurately, while some adults never attain this ability. Musical ability may be detected early in life. On the other hand, a lack of ability may not show itself during the pre-school years unless a child is obviously physically handicapped.

We are all eager to learn what our pre-school children can do and how they can be trained to the best advantage.

It is important that we should expect enough and yet not too much of our children. It is imperative for those who work with all children, young and old, to observe and interpret their activities carefully and accurately in order that abilities and disabilities may be discovered early and developed or checked as the need may be. This is the key to the rearing of healthy and well-adjusted children.

This treatise aims to present the data so far obtained from a number of observations, tests and experiments with children from three to six years of age in the field of music education and to suggest a curriculum for training which will be practical in application and of maximal educational effectiveness.

MATURATION VERSUS TRAINING

The primary concern of anyone dealing with young children is to understand the factors that determine their development. These factors can be divided into those which are inherent in the organic make-up of the child and those which surround but are outside him. The interaction of these two, heredity and environment, constitutes the determiners of individual development. Scientific study is constantly at work endeavoring to understand how this interaction takes place and to what extent each group of factors (inherited and environmental) determines development. Psychologists and educators collaborate in an attempt to understand this development through a study of maturation and training.

Everyone realizes that a child's accomplishments increase materially from month to month and from year to year. This influence is presumably due to two factors: the influence of growth and the influence of experience and training. The growth factor cannot be studied experimentally unless abnormal conditions are introduced. The factor of training, however, can be controlled experimentally. What will happen, we ask, if we take a number of children, similar in age and ability, and give special training to some while others are left to develop at their own pace? Will those who receive training gain a permanent or only a temporary advantage over the others? If it is found possible to aid a child to superiority through special opportunities, it would appear that individual differences in fundamental capacity could be significantly influenced by early environment. On the other hand, if those from whom this early training is withheld score as high when tested at a later stage of growth, it would appear that to a large extent performance depends upon fundamental capacity alone.

A number of scientific studies have been made in the last twenty-five years in an attempt to answer questions of this nature which have arisen in the minds of educators and others interested in the development and guidance of young children. The equivalent group method of experimentation is usually used in research dealing with the relative influence of training and maturation. Such experiments

include the following steps:

1. Initial tests on all subjects.

2. Segregation of subjects into two equivalent groups (practice and control or experimental and check).

3. Administration of specific training to the practice or experimental group for a period of time during which the control or check group receives no training.

4. Retests of both groups at the end of the training period, and

5. Retests again several months after training has ended.

Following the above-mentioned procedure, A. I. Gates,[4] an eminent psychologist, conducted two experiments in an attempt to determine the nature and limits of improvement due to training. In the first experiment the rate of tapping of children ranging in age from four to six years was tested before and after training and the results compared with ratings obtained from testing an initially-equivalent group. After a lapse of six months during which no practice was given either group, training and tests were again given to all children. Within a few days the check group received as high a score as the group that had received training over an extended period. The same testing procedure was used in a second study dealing with the influence of training or immediate memory span in a test using finger manipulation. When retests were made following a period of no practice for either group, little difference

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4. Gates, A. I., The Nature and Limits of Improvement Due to Training, National Society for the Study of Education, Twenty-seventh Yearbook, 1928, pp 441-461.

in the performance of the practice and control group was noted. In view of the results obtained in these two tests, Gates concluded that training gives information and techniques but does not increase fundamental capacity.

Jacob Kwalwasser,[5] who has compiled several tests designed to measure fundamental capacity, has stated that training has little influence on the scores obtained but at the same time he acknowledges the possibility that training allows for better use of fundamental capacity. According to Kwalwasser, training does not add to one's musical heritage; it merely cultivates that heritage. It cannot increase talent itself and it may not even increase interest in music, but it can and does increase the use of whatever talent children have been endowed.

Carl Seashore,[6] who arranged the widely-used Seashore tests of musical talent, has repeatedly stated that musical capacity is inherent and fixed and that training has no effect upon it or upon the scores obtained on music tests. Seashore agrees with Gates and Kwalwasser when he stated that use of fundamental capacity can be increased but that the capacity itself will remain unaltered.

Studies on the relative influence of training and maturation in several fields of endeavor were made by Dr. Arthur T. Jersild and associates[7] at Columbia in 1932. Using

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5. Kwalwasser, Jacob, The Composition of Musical Ability, National Society for the Study of Education, 35th Yearbook, Pt. II, p 35.

6. Seashore, Carl E., Psychology of Musical Talent, Iowa City, Univ. of Iowa Press, 1919.

7. Jersild, Arthur T. and others, Training and Growth in the Development of Children, N. Y. Teacher's College, Columbia Univ., Child Development Monographs, No. 10, 1932.

the same subjects and the equivalent group method of research, the effect of practice upon speed of color naming, strength of back, speed of tapping and improvement in vocal performance was noted. The results with but a single exception indicated that special training, at least when confined to a period of several months, does not significantly accelerate development or alter distribution of individual differences. The sole exception in the results occurred in the study on vocal ability, in which the children who received training made astonishing gains over those who received no training. The gains were much more pronounced and were more permanent than in any other test made. This gain is doubtless due to the fact that the vocal test subjects could improve their scores by adding new items to the performance, while the tests consisted of the repetition of a single item of performance. In these tests permanent improvement required an increase in ability in terms of strength and speed. The results obtained from this series of studies are in keeping with the accepted belief that training can accomplish an extension of knowledge or skill more readily than it can accomplish an increase in motor or mental capacity.

With due recognition of the opinions of these psychologists, it must be conceded that, for all practical purposes, an increase in use is equivalent to an increase in fundamental capacity and for this reason training of pre-school children is desirable.

In addition to the above-mentioned study, Dr. Jersild has made other studies in the field of music education as have other prominent psychologists. All have been made in an effort to contribute to our understanding of the relation of maturation and training. The tests have not answered all questions, but they have indicated the types of musical activities that are effective at certain ages and also the types of activities in which training has seemed ineffective. The tests would seem to prove conclusively that music training for pre-school children is decidedly worthwhile.

STUDIES IN SINGING

THE JERSILD-BIENSTOCK STUDY[3]

Studies in singing at the pre-school level have yielded interesting results, both in regard to the extent of fundamental capacity and also in regard to the effect of training. An investigation designed to measure the singing ability of three-year-old children and to study the effect of training upon the vocal performance of the same children was conducted by Jersild and Bienstock at Columbia University in 1930-31. Thirty-six children were used having an average age of 37 months and ranging in age from 31 to 43 months at the beginning of the experiment. The children were given initial tests to measure their ability to reproduce single pitches or two-tone intervals. The ages of the children and the results of the initial tests were used as a guide for the division of the subjects into two equivalent groups (experimental and check) of eighteen children each. The children in the experimental group received training in the singing of single pitches and two-tone intervals during 40 ten-minute lessons distributed over a period of six months. The training also included the singing of songs containing notes within and beyond the child's pitch range as well as periodic repetition of pitch and interval tests

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3. Jersild and Bienstock, The Influence of Training on the Vocal Ability of Three-Year-Old Children, Child Development 2, Dec. 1931, pp 272-291.

stressing items on which the child had previously failed.

The practiced children were compared with those of the check group at the end of the six month training period, again five months later, and finally two years later. The check group enabled the investigators to determine the degree to which the improvement exhibited by the trained group could be attributed to such factors as maturation, motivation, familiarity with procedure and tester and other incidental conditions, rather than to an actual increase in vocal ability resulting from training. The performance of each child was scored by observational technique based on the judgment of musically-trained adults. The child was given a score when in the judgment of the tester he correctly reproduced a given pitch or interval one or more times in a series of eight successive trials.

While the training was in progress it was found necessary to extend the range of tones and the number of intervals used in the training series and periodic retests. The initial pitch test included 11 notes extending from middle c' to f" in the second octave higher. The augmented pitch test included four additional higher notes and three additional lower notes making a total of 13 notes with a range extending from g below middle c' to c''' two octaves above middle c'. The eighteen subjects of the experimental group sang an average of 4.22 notes on the initial test of 11 notes given before training, but after

six months of training, the average score was nearly perfect (Table I). On the extended test of 13 notes, the experimental group sang an average of slightly over 15 notes after three and one-half months of training. From the comparative scores given in Table I it will be noted that the experimental children after training sang an average of almost twice as many tones as did the initially-equivalent check children. The practiced children still retained a statistically reliable superiority when both groups were retested five months after the training had been discontinued. The relative difference in scores still existed when retests were made two years later.

TABLE I

A comparison of average scores of experimental and check children (13 pairs) received on pitch tests.

AVERAGE NUMBER OF NOTES CORRECTLY SUNG	EXPERIMENTAL GROUP	CHECK GROUP
On initial test of 11 tones	4.22	4.22
On repetition of the 11 tone test after six months of training	10.72	6.44
On extended test of 13 tones after three and one-half months of training	15.50	8.00
On repetition of the 11 tone test five months after termination of training	10.26	7.00
On repetition of the 13 tone test five months after termination of training	16.26	10.21

The interval test showed a similarly high rate of improvement coincident with training. The initial test had

included the following twelve intervals: ascending and descending major and minor seconds and thirds, perfect fourths and perfect fifths. The extended test included these intervals and in addition the ascending and descending major and minor sixths and sevenths and octaves, making a total of 22 intervals. Both experimental and check children sang an average of four of the intervals correctly on the initial test of 12 intervals. After six months, the average score of the trained children was nearly perfect (Table II). When the extended 22-interval test was given them after three and one-half months of training, they sang an average of over 17 intervals. From the comparative scores given in Table II it will be noted that the experimental children reproduced many more intervals that did the initially-equivalent check children. The practiced children still retained a substantial superiority when both groups were retested five months after the training had been discontinued. The relative difference in scores still existed when retests were made two years later.

TABLE II

A comparison of average scores of experimental and check children (16 pairs) received on interval tests.

AVERAGE NUMBER INTERVALS CORRECTLY SUNG	EXPERIMENTAL GROUP	CHECK GROUP
On initial test of 12 intervals	4.25	4.31
On repetition of 12 interval test after six months of training	11.50	8.00

TABLE II (cont.)

AVERAGE NUMBER INTERVALS SUNG CORRECTLY	EXPERIMENTAL GROUP	CONTROL GROUP
On extended test of 22 intervals after three and one-half months of training	17.00	10.13
On repetition of 12 interval test five months after termination of training	11.40	7.33
On repetition of 22 interval test five months after termination of training	19.00	9.84

Jersild and Bienstock do not claim that the marked improvement shown after training in both pitch and interval reproduction represents a change in fundamental capacity, nor does this study answer the question as to whether the child who received training in singing at an early age will have a permanent advantage over the child whose voice is not trained until later. The findings do indicate, however, that training at the age of three years can be undertaken with promising results.

The interval test by Jersild and Bienstock further indicated that the narrow intervals (seconds and thirds) are sung more readily than the wider intervals (perfect fourths and fifths); that the descending intervals tend to be sung more readily than ascending intervals and that the chromatic interval or half step was sung quite readily in the test situation (Table III). On the final test, the minor second was sung by all 13 children who had received training. This latter finding does not support the rather

widely-held view that the chromatic interval should be excluded from the songs of young children. Actually it imposes a needless restriction upon the material which might be used.

TABLE III

Number of children reproducing certain intervals before training (47 children tested).

	[illegible]	[illegible]
Major second	24	23
Minor second	10	11
Major third	17	22
Minor third	13	23
Perfect fourth	12	16
Perfect fifth	13	8

THE LEARNED STUDY[9]

In 1936 Janet Learned conducted a study at the University of Iowa on the effect of training upon the musical performance of three- and four-year old children and concluded that such training was worthwhile. Sixteen three-year-old and fourteen four-year-old children were used in the study. Each child was given an initial test on the reproduction of pitch, intervals, phrases and rhythms. In addition, interest in music or reaction to it was noted. The results of the tests were used on a basis for dividing the children into initially-equivalent groups: experimental and check. The experimental subjects were trained in groups of three for ten minutes daily for thirty days. Ten songs were used for training purposes, but only two songs were presented each day. Various means of increasing voice flexibility as well as interest were employed. Visual and motor experiences were combined with auditory cues in an effort to give a concept of high and low and to facilitate voice placement. The singing of intervals, using names of parts of vehicles and other classifications was used as drill. The children were given pitches directly from a gong. This instrumental stimulus seemed to confuse them, and it was later found that the human voice, particularly the female voice, was the best medium for stimulating correct vocal response in the pre-

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9. Learned, Janet, The Effect of Training upon the Musical Performance of Three- and Four-Year-Old Children, State University of Iowa Master's Thesis, 1936.

school child. It was also found that deviation from the stimulus tone often became greater beyond the fourth trial, presumably due to fatigue.

Experimental and check groups were tested and compared after fifteen days and again after thirty days of training. The results of the study showed that training not only increased the number of pitches, intervals, and phrases reproduced but also made it possible to reproduce them with fewer trials (Table IV).

TABLE IV

A comparison of number of trials required and correct responses made by experimental and check children in pitch, interval and phrase tests.

	PITCH		INTERVAL		PHRASE
	Trials Required	Correct Responses	Trials Required	Correct Responses	Score
THREE-YEAR-OLDS (sixteen children)					
INITIAL TESTS					
Experimental Group	27.7	6.5	37.0	7.0	
Check Group	23.9	6.4	31.3	8.8	
FINAL TESTS					
Experimental Group	17.3	8.3	25.4	10.3	6.4
Check Group	20.4	7.2	31.9	8.3	4.4
FOUR-YEAR-OLDS (fourteen children)					
INITIAL TESTS					
Experimental Group	24.7	5.4	37.4	5.7	5.1
Check Group	14.7	8.3	32.7	7.9	4.7
FINAL TESTS					
Experimental Group	14.3	8.0	21.1	9.7	9.6
Check Group	14.4	7.7	24.6	8.4	6.0

Possible Pitch Score - 9 Possible Interval Score - 12
Possible Phrase Score - 14

In contrast to the [illegible] group, a steady gain was shown by the experimental group. With the three-year-old children, greater improvement was made during the second half of the training period; in the four-year-olds, greater improvement, except in the pitch test, was made in the first half of the training period. A steady gain in interest was displayed by the experimental group and this was a spur to effort, but the control group children experienced a loss of interest while the study was in progress.

There seems to be very little difference between the singing ability of three- and four-year-old children. Difference in ability was the most pronounced in phrase reproduction. Higher tones were more difficult for the children of both age groups than lower ones.

Louise Kelliger conducted a study at the University of Iowa in 1936 on the effect of training upon the musical performance of five-year-old children and concluded that such training was worthwhile. Thirty-six children with an average chronological age of 56-68 months and an average mental age of 68.4 were used in the study. Each child was given an initial test on the reproduction of pitch, intervals, phrases and rhythms. In addition interest in music or reaction to it was noted on a blank devised for that purpose and any home conditions which might influence musical aptitude were noted. The results of the tests were used as the basis for segregating the children into four initially-equivalent groups: two experimental and two check. The experimental groups were trained in small groups for ten minutes daily for forty days. Nine songs were used for training purposes, but other songs were sung for interest. Difficult words were explained, unusual skips were practiced and considerable individual help was given. Various teaching devices were used in an attempt to bring melodic consciousness to each child. In order to increase an awareness of melodic pattern and to develop tonal memory, the teacher often hummed the melodies and asked the children to identify them. Sometimes

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10. Kelliger, Louise, The Effect of Training Upon the Musical Performance of Five-Year-Old Children, State University of Iowa Master's Thesis, 1936.

the children played a combination of tones on the gong or tuning forks and first the teacher and then a child sang them. Some children were able to sing the tones directly after the instrumental sounding.

Both experimental and check groups were tested and compared after fifteen, thirty and forty days of training. All children responded in some way. Results of the study showed that training not only increased the number of pitches, intervals and phrases reproduced but also had made it possible to reproduce them with fewer trials (Table V).

TABLE V

A comparison of number of trials required and correct responses made by experimental and check children in pitch, interval and phrase tests.

FIVE-YEAR-OLDS (thirty-six children)

	PITCH		INTERVAL		PHRASE
INITIAL TESTS	Trials Required	Correct Responses	Trials Required	Correct Responses	Score
Experimental Group	16.7	7.7	23.2	10.0	13.5
Check Group	14.1	8.0	23.4	10.2	13.2
FINAL TESTS					
Experimental Group	11.0	8.8	16.7	11.3	18.2
Check Group	13.7	8.3	20.6	10.3	15.9

Possible Pitch Score - 9 Possible Interval Score - 12
Possible Phrase Score - 29

In contrast to the untrained children, the trained children showed a consistent improvement in each test. The gains were not statistically significant but it would seem

that such consistency of improvement would not be due to chance alone.

Using data compiled by Miss Learned in the previous study along with data secured in her own study, Miss Heiliger made a comparison of the differences in vocal ability at the three- four-, and five-year levels. She found there was a greater ability to reproduce single pitches at each succeeding age level from three to five years. She further found that the five-year-olds of the study significantly exceeded the three- and four-year-olds in interval and phrase reproduction. These differences in ability at the various age levels largely disappeared subsequent to the training program. The ability of the three- and four-year-olds, although lower than that of the five-year-olds upon initial testing, approached it at the close of training. This fact alone evidences the worth of music training at the age of three and four years. The improvement made by the five-year-olds during the training period was less marked but it must be remembered that there was less room for improvement at this age level. From the studies of Learned and Heiliger, it is apparent that training is effective down to the three-year level.

THE HISSEM STUDY [11]

In 1932-33 Irene Hissem conducted an eight month training program with pre-school children at Mills College, California with favorable results. Her subjects were forty children ranging in age from two to four years whom she gave 10 to 20 lessons. By using a scientifically-tuned Deagon gong based on a six tone C tonic chord (c' e' g' c" e" g"), a model of pure tone was presented and the child asked to reproduce it as accurately as possible both vocally and by playing it on the gong. A child's natural pitch had been previously determined and all work started from that point. A "song" was given on this tone and as a child mastered it, gained control and added another tone, the song was broadened to include it. Music conversations were also used.

At the close of the training period, three children were able to match all six tones; fourteen were able to match two tones; seventeen could match one tone and only six failed to match any tone. Six of the children developed a sense of pitch approaching the absolute. The children also showed improvement in interval production.

The children of this study did not make as spectacular gains as did those of other studies, but the gains were sufficient to show that training was beneficial.

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11. Hissem, Irene, A New Approach to Music for Young Children, 1932-33.

THE UPDEGRAFF, HEILIGER AND LEARNED STUDY [12]

The procedure used in the foregoing studies was repeated, with important supplements and a larger number of children in a study made by Updegraff, Heiliger and Learned in 1935-36 at the University of Iowa. One hundred and fourteen children were used in the preliminary study for the purpose of perfecting techniques. Sixty-six children completed the various tests of the main study: sixteen three-year-olds, fourteen four-year-olds and thirty-six five-year-olds. On the basis of scores secured in initial tests and upon ratings in interest, the subjects at each age level were divided as equally as possible into two groups. There were six groups in all, three experimental and three check. The children in the experimental groups were given intensive special training for ten minutes each day for thirty to forty periods. Nine songs were used with ranges from b below middle c' to the second f" above. As the training progressed, retests of both the experimental and check groups on the initially-given pitch, interval and phrase tests were given at the end of fifteen days, again at the end of thirty days and finally, for the five-year-olds, at the end of forty days. The children at each age level made consistent and substantial gains and although some of the differences were not statistically significant, they do point to a marked improvement following training (Table VI).

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12. Updegraff, Heiliger, Learned, The Effect of Training upon the Singing Ability and Musical Interest of Three-, Four-, and Five-Year-Old Children, 1937.

TABLE VI

Comparison of changes in scores of three-, four-, and five-year-old children in the experimental and check groups after thirty training periods.

	Reproduction	Initial Test	After Thirty Days Test
Experimental Three-Year-Olds (8 Children)	Pitch	5.75	8.25
	Interval	7.00	10.25
	Phrase	3.13	6.37
Check Three-Year-Olds (8 Children)	Pitch	6.38	7.13
	Interval	8.75	8.25
	Phrase	4.37	4.37
Experimental Four-Year-Olds (7 Children)	Pitch	5.43	8.00
	Interval	5.71	9.71
	Phrase	5.14	9.57
Check Four-Year-Olds (7 Children)	Pitch	8.29	7.71
	Interval	7.85	8.43
	Phrase	4.71	6.00
Experimental Five-Year-Olds (18 Children)	Pitch	7.66	8.44
	Interval	10.00	10.89
	Phrase	13.50	17.60
Check Five-Year-Olds (18 Children)	Pitch	8.00	8.27
	Interval	10.22	10.28
	Phrase	13.20	15.60

A perfect score in the pitch test was given if a child succeeded in reproducing correctly the nine notes of the test after no more than four trials per note. Possible pitch score -- 9.
A perfect score in the interval test was given if a child succeeded in reproducing correctly the twelve ascending and descending intervals of the test after no more than four trials per interval. Possible interval score -- 12

Possible Phrase Score for Three- and Four-Year-Olds - 14.

Possible Phrase Score for Five-Year-Olds - 29.

The trained children were amazingly skilled in reproducing intervals in the right direction. Percentages sung

in the right direction by the various age groups follows:

3 Yr. Olds - 99.2% (only 22 incorrect out of 2523 intervals)

4 Yr. Olds - 99.5% (only 7 incorrect out of 1282 intervals)

5 Yr. Olds - 99.8% (contributed by only three children from a group numbering eighteen)

Tests in the singing of phrases proved to be the most discriminating, since they gave the five-year-old group opportunity to register the full scope of improvement made by training. The ability of children to reproduce phrases showed a normal increase with maturation, but over and above this it was shown that the ability could be improved substantially at each age level by means of training. Training (to the extent of thirty practice periods) brought the three-year-olds up to the initial level of the four-year-olds and the four-year-olds became practically equal in ability to the initial level of the five-year-olds. The training program definitely increased the ability of the three-, four-, and five-year-old children to reproduce single pitches, intervals and phrases.

THE WILLIAMS STUDY [13]

On the other hand, evidence secured in other experiments has gone against the trend of that secured by Jersild and Bienstock, Learned, Heiliger, Nissen, and Updegraff, Heiliger and Learned. Dr. Harold M. Williams reports a study conducted at the University of Iowa in 1935. In this study, children aged four and five were trained in groups in the singing of songs. The songs were presented vocally with piano accompaniment and then the children were invited to join the teacher in singing them. Two practice periods a day were given for thirty days. Objective measurements of achievement (by the dictaphone technique) were made before training and after ten, thirty-one and sixty practices.

A weighted error method of scoring was used in which the amount of error in half tone units for each tone was recorded and the cumulative total was assigned as a score (error score). This method of scoring more heavily penalizes the near monotone, for example, than the child who makes only small or occasional errors.

Practice in learning the melody of a song in this way resulted in improvement made between the tenth and thirty-first sessions when tests were administered, but some children showed poorer performance after sixty practices than after either ten or thirty-one. (Table VII)

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13. Williams, H. M., Immediate and Delayed Memory of Pre-School Children for Pitch in Tonal Sequences, 1935.

TABLE VII

Group error scores in delayed recall on phrase reproduction for children completing the training series.

	21 Children (47-69 Months)	31 Children (47-70 Months)
STANDARD STIMULUS		
Preliminary	51.6	53.9
After 10 practices	53.9	57.9
After 31 practices	37.6	33.0
After 60 practices	34.0	
CHILD'S OWN KEYNOTE		
Preliminary	60.0	58.5
After 10 practices	42.6	46.3
After 31 practices	30.0	32.2
After 60 practices	44.7	

Williams interprets this result as due to boredom with the song. It is possible that different results might have been obtained if a larger variety of songs had been used and if more individual attention had been given to members of the group.

THE HATTWICK STUDY [14]

Dr. Melvin S. Hattwick, University of Iowa, also studied the effect of practice on the musical responses of pre-school and other children. Hattwick lists four possible methods for measuring differential reactions to pitch: the interval matching method, the conditional response method, the singing method and the verbal concept method. For various reasons, he rejected the first two methods for use with pre-school children. In the singing method, the child listens to simple intervals under the instruction to sing what he hears. This method of testing pitch discrimination was used in all studies reviewed thus far in this treatise and Hattwick uses it in this study.

The sound producing apparatus consisted of a vibrating bar hung over a resonator which was tuned to the bar. By striking the bar with a small rubber hammer, a pure tone was produced. Table VIII shows the results obtained when children aged four and five years were given a test to reproduce three different intervals.

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14. Hattwick, M. S., A Genetic Study of Differential Pitch Sensitivity, 1935.

TABLE VIII

Children	4 YR. OLDS		5 YR. OLDS		TOTAL	
	Number	Per-cent	Number	Per-cent	Number	Per-Cent
Tested	16		24		40	
Responded for twenty-five trials	12	75	17	71	29	73
Singing direction correctly in 90 per cent of trials	3	25	12	70	15	52
Refusing to sing but accepting a verbal method of response	3	19	5	21	8	20
Refusing to sing or respond verbally	1	6	2	8	3	8

Since one-fourth of the children refused to sing in this experiment, it was impossible to determine what percentage of the total group could sing. In an effort to secure responses from every child, an experiment using an Ediphone horn to add motivation was undertaken. The teacher sang "ding-dong" on the proper interval into the horn and instructed the child to sing just as he had done. The motivation was provided by promising the child he would later be allowed to hear the recording. The stimili used were vocal major thirds and seconds. A child was given credit if he sang at least nine out of the first ten trials correctly. If he failed on more than one trial, the test was augmented to about twenty-five trials in order to determine a more accurate percentage of success. The ediphone proved an excellent motivating devise and the children responded without exception (Table IX).

TABLE IX

Relationship of voco-motor control to chronological age.

Age, Years	Children	Per Cent Who Would Sing	Per Cent Singing Accurately *	Per Cent Singing Only Directionally *
4	21	100	0	5
5	26	100	13	23
6	21	100	14	48

* 90 Per Cent Success.

The effect of practice on the interval singing ability of pre-school children by use of the singing method was not determined. Eighty children aged 7 to 11 improved from 0-27 per cent after practice. Hattwick feels that the use of the singing method of pitch discrimination becomes more limited as children grow older and become more reticient about solo singing.

In summary Hattwick says that none of the four-year-olds in his study could sing a two-tone interval accurately and that only one child in ten had developed sufficient voco-motor to respond in the right direction. Every tenth child in the five-year age group could sing accurately the interval heard and every fifth child could sing them in the right direction.

In the vocal concept method of pitch discrimination, two tones are presented to the subject, who is required to respond verbally with some sign to tell whether the second tone was higher or lower. In a study on the effect of training on the use of verbal concept to tell direction

of intervals conducted by Dr. Hattwick at the University of Iowa in 1935, 125 children ranging in age from three years, six months to eight years, five months were trained by the regular music teacher during the daily music hour for a period of five weeks. At the end of five weeks the children were again tested individually. Table X presents the results of the test both before and after the group training period.

TABLE X

Effect of extensive group practice in learning a simple verbal concept in audition.

Chronological Age	Children Tested	PER CENT TESTABLE Before Training	After Training	Per Cent Gain from Extensive Training *
4	16	10	19	9
5	20	23	40	13

* To secure credit a child had to respond correctly nine trials out of ten.

The results of the tests showed that in the reproduction of direction and pitch of intervals improvement with extensive training comes after five years and that prior to that age, training gives little improvement in the scores. It is interesting to note that between the fourth and fifth years, great improvement without extensive training occurs. Hattwick acknowledges that use of the vocal concept of pitch discrimination increases with age and that few children of pre-school age will respond to its use. He discovered that children made better scores when using instructions involving terminology of "going up--going down" than when using "higher--lower". They also

made better scores when the speed of the test was made varible and set to the pace of the group tested.

In the four-year-old group, five children out of ten could successfully use a verbal concept of "going up--going down" in the visual field, but only one in ten could use the terms successfully in the auditory field. Not more than two out of ten children of this age could report verbally or by singing whether they were able to discriminate large pitch differences.

In the five-year-old group, only two out of ten before extensive practice and four out of ten after extensive practice were able to report successfully in the auditory field. Not more than four out of ten children of this age could report verbally or by singing whether they were able to discriminate large pitch differences.

Neither a minimal nor a long period of training was effective in teaching the verbal concept of "going up--going down" in the auditory field although the same concept was understood in the visual field by all children at five years of age.

In 1932 Dr. Williams reported a previous study[15] in pitch discrimination by use of the verbal concept method made at the University of Iowa. Its purpose was to test the possibility of teaching the use of the words "high--low" or "upstairs--downstairs" to denote the direction of the second tone of a two-tone interval. In his study twenty-four children aged four and five years were trained

15. Williams, Sievers and Hattwick, The Measurement of Musical Development, 1932

in groups. Training consisted of verbal instruction, demonstration on the piano and having the children go "upstairs or downstairs" by physical steps or leaps. After about five minutes of orientation, the children were first tested visually and then auditionally on the direction of intervals given by the tester. The intervals were presented vocally and by means of the piano. The following situations in both directions were used: a stepwise progression, c' d' e' f' g'; an arpeggio, c' e' g'; a minor third, e' g'; a second, g' a'; and a minor second, g' $g^{\#'}$.

The visual learning was successful with very little practice with all children demonstrating correctly four times the proper direction of intervals. In the auditory test the following percentages of children responded correctly (averaging the results for both directions on each test situation): scale, 90 per cent; arpeggio, 72 per cent; third, 52 per cent; second, 52 per cent; semi-tone, 54 per cent. In the case of the stepwise scale progression, auditory orientation was quickly made. With the other interval ranges, however, this method of pitch discrimination failed, as the percentages are only a non-significant amount above chance success. Certain children, however, were able to make between 90 and 100 per cent correct responses for the entire test.

Williams felt that one possible reason for the generally poor results was that the children became bored with the situation even during the first trials and he expressed the opinion substantiated by Hattwick in 1935 that it is

difficult to test pitch discrimination in pre-school children through use of the vocal concept method. Williams did not make any tests on the effect of training upon responses.

SUMMARY OF STUDIES IN SINGING

In summarizing and comparing results shown in the studies made on the singing of pre-school children, several interesting facts are brought forth. First of all, a wide range of fundamental capacity was reported by the various experimenters. For example, the performance of the four-year-olds in the Hattwick study was inferior to the performance of the three-year-olds in the Jersild and Bienstock study. The Updegraff, Heiliger and Learned study reported that their four-year-olds could initially sing an average of 5.71 intervals out of a 12 interval test, whereas Hattwick had no four-year-olds who could do this.

Secondly, all studies showed that performance of all ages and in all tests improved with training, with the sole exception of the Williams test, in which children improved their weighted error scores through 31 practices and then regressed, a fact which Williams himself attributes to boredom with the song. Notwithstanding the regression, the children of the Williams study had not achieved the rate of improvement up to the start of the regression as had those of other studies. Hattwick made no test on the effects of training on the scores of pre-school children,

but his older children showed decidedly less improvement after training than did the children of other experimenters. The discrepancy between initial scores and improvement due to training appears to be due in part to differences in scoring standards and to a large extent also to differences in procedure. The Hattwick children were required to give correct responses nine trials out of ten in order to receive credit whereas children in other studies received credit if they were correct one or two times out of several trials. This is an exceptionally high standard of performance, and a less rigid one would seem advisable in tests designed for the practical purpose of probing children's potentialities. Furthermore, in the Hattwick study, if the child failed in more than one trial out of ten, the test was expanded up to twenty-five trials. On such a test it is conceivable that some children would become fatigued or bored or both and scores would be adversely affected.

As for differences in procedure, the children in the Hattwick study received their stimuli directly from the tone of a vibrating bar. Those in the Hissem study received theirs from a Deagon gong. Children in all other studies reproduced tones or intervals presented directly by way of the human voice. As an experiment, Updegraff tried using bells for stimuli and had many refusals from children who had responded correctly when given the tone or interval by the human voice. It is,

therefore, quite possible that the children of the Hattwick study would have made higher scores if they had been given their pitches in this manner. In all education the more testing procedures and methods of training are adapted to the individual needs and nature of young children, the larger are the potential abilities that are revealed and the larger are the gains achieved through practice.

In continuing the comparison of the results of the various tests it must be remembered that the Jersild and Bienstock and the Updegraff, Heiliger and Learned studies used the experimental and check group plan of research which enabled the experimenters to know what amount of improvement could be credited to training and what amount must be credited to maturation. This fact would seem to give these studies greater import than the Hattwick and Williams studies which did not use this plan of research. With due regard to the findings of all experimenters, the value of training in pre-school singing is apparent. Further study is needed to tell how permanent the values may be but the findings have strongly indicated that training in singing is one performance that might well be selected for emphasis in the education of young children.

RANGE AND PLACEMENT

The studies in singing brought forth interesting facts concerning the range and placement of the voice of the pre-school child and at least one independent study on the role of pitch level and pitch range in young children has been made. According to certain prominent educators in the field of music education, the range of a child's voice extends from first line e' to fourth space e". Although there has been no published experimental data in support of this claim, music publishers have accepted the range and have used it as a guide for the selection and arrangement of song material in children's music books. Jersild and Bienstock in their above-mentioned study on the effect of training on the vocal ability of children also conducted research on the range of children's voices and their placement on the musical scale. According to their findings, the vocal range of untrained children of pre-school age as represented in their study averages from five to ten tones. Some children reproduced as many as twenty-two tones, which is a greater range than that possessed by the average adult. (Table XI).

TABLE XI

Average number and range of tones sung by pre-school children.*

Age	Number Children Tested	Average Number Tones Sung	Range
TWO YEARS			
24-30 months	16	4.3	0-9
30-36 months	14	6.4	0-17
24-36 months	30	5.3	0-17
THREE YEARS			
36-42 months	19	7.4	1-17
42-48 months	24	6.5	1-17
36-48 months	43	6.9	1-17
FOUR YEARS			
48-54 months	24	9.9	2-22
54-60 months	21	8.2	3-17
48-60 months	45	9.3	2-22
FIVE YEARS			
60-66 months	27	10.4	2-19
66-72 months	25	9.7	2-19
60-72 months	52	10.0	2-19
ADULTS	65	19.7	13-29

* Scoring based upon the reproduction of individual tones and half tones corresponding to the C Major scale.

The table presents evidence of a rapid development of ability to sing a wide range of tones. Improvement from the age of two to six years is decidedly greater than the improvement from six years to maturity. Indications are that a child has the capacity to produce a wide range of tones at an early age. Tests further revealed that a person realizes a large portion of his potential vocal range by the time he reaches third grade in elementary school. These findings emphasize the need for vocal training at an early age.

In the Heiliger study, the experimental children after training possessed an average vocal range of two octaves and one note. All could sing as high as one octave above middle c'; 83 per cent could sing as high as the second g" above middle c'; 25 per cent as high as the third d"' above. All except four per cent could sing as low as the b below middle c'; over 50 per cent could sing the a; 36 per cent as low as g and 17 per cent as low as e below middle c'. Fifty per cent of the subjects could sing all the notes within a range of a below middle c' to the second a" above it. These data indicate that the vocal range of the five-year-old child is wide and that it extends to the lower ranges.

These ranges for the five-year-olds were identical to those given in the Updegraff, Heiliger and Learned study. In this same study, the three-year-old children sang in a range of from d below middle c' to g" the second octave above. Fifty per cent could sing as high as the first c" above middle c'. Fifty per cent could sing as low as g below middle c'.

Hattwick reported a study[16] in 1933 in which he undertook to determine the mean pitch level and mean pitch range used by pre-school (and first and second grade) children when voluntarily choosing and singing any song. In his

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16. Hattwick, M. S., The Role of Pitch Level and Pitch Range in the Singing of Pre-school, First Grade and Second Grade Children, Child Development, 4:1933, pp 281-291.

study he first used thirty-four children aged four and one-half to six years for subjects from the University of Iowa pre-school laboratories, and an edliphone for recording. The pitch a' was sounded--the child pitched and sung the song he liked best--the pitch a' was again recorded. The pitch level of these pre-school children was found to be the e' above middle c' for this was the level most children had chosen to start their songs.

When the range and pitch level for these children were compared with those for the same songs as presented in songbooks, they were found to be significantly within a narrower range and with a lower pitch level.

After forty-eight group practice periods (two a day) for thirty-seven children aged four and one-half to six years, Hattwick found that the pitch level was still significantly lower than that presented by the teacher during the practice period. After the same number of practices, the mean range was still significantly lower on the musical scale than the range presented in the practice period but not significantly narrower in semitone value.

Hattwick then sampled three hundred and fifty songs to determine range and the percentage of certain pitches used. A summary of his findings follow:

6 per cent contained one or more pitches of f"
42 per cent contained one or more pitches of e"
47 per cent contained one or more pitches of e"flat
over 81 per cent contained one or more pitches of e"
only 8 per cent contained one or more pitches of c'
47 per cent of the songs had a range of from f' to e"flat
only 8 per cent of the songs had a range of from e' to e"

In the songs he sampled Hattwick found the mean pitch level to be at approximately g' sharp and the mean range to be approximately 10.5 semitones (e' to e" flat). From his study, Hattwick believed the range of the pre-school voice to be about the same in semitone value but he firmly believed that it is placed lower on the musical staff, about c' to c". In studies previously mentioned Williams concurs in this belief.

Hattwick further believed that many children who sing off pitch when songs are pitched as written would sing correctly if the songs were pitched at a lower level. Practically all children would then be able to participate in the music activities and the interest of the group would be united in purposeful activity.

The Jersild-Bienstock study also indicated that children's voices are pitched lower than is commonly supposed (Tables XII and XIII). On initial tests the pitches middle e' and d' (which are supposed to fall below a child's favored range) were sung more readily than the higher pitches, d", e" and f" (which have been regarded as well within a child's range). The tests further indicated that the ascending notes from middle c' to a' were sung the most readily by the children (Table XII).

TABLE XII

Pitches reproduced by fifty per cent or more of subjects tested at each age level.

2-3 years	d' e' f' g' a'
3-4 years	c' d' e' f' g' a' *
4-5 years	b c' d' e' f' g' a' b' c"
5-6 years	a b c' d' e' f' g' a' b' c" d"

* a' was sung by forty-nine per cent of the children.

TABLE XIII

Number of children reproducing certain pitches before training (forty-eight children tested).

c'	d'	e'	f'	g'	a'	b'	c"	d"	e"	f"
19	28	30	27	29	22	13	12	11	6	5

This same tendency to favor the lower tones was apparant in the subsequent phrase tests and on the final pitch test given after six months of training (Table XIV). One of the effects of training was the increase in the number of notes which could be sung. After six months of training, the eighteen children used in the study averaged practically one hundred per cent in reproducing a range from b below middle c' to the second e" above (Table XIV). No evidence of strain was noted in using this extended range but the children had been encouraged to sing softly at all times and this caution doubtless insured against strain.

TABLE XIV

Number of children reproducing certain pitches after six months of training (eighteen children tested).

g	a	b	c'	d'	e'	f'	g'	a'	b'	c"	d"	e"	f"	g"	a"	b"	c"'
5	15	17	18	18	18	18	18	18	18	18	17	18	17	15	15	14	13	9

Gains made during training included proportionately more high than low tones. A more formal or an embarrassing situation seemed to hamper the production of high tones. Thus it appears from the initial pitch tests, from the final pitch tests given after training, and from the tests employing phrases used in training, that three-year-old children, as represented in this investigation, can sing notes below the commonly accepted range quite as readily as some of the higher notes which have been regarded as well within the child's capacity.

Approximately two years after the first study Jersild and Bienstock trained twenty-five children age forty-one to fifty-six months in thirty-eight periods.[17] During the training, the vocal range of these children improved from an average of 13.2 to 17.2 tones for a gain of about thirty per cent. As a control group method of research was not used, the amount of improvement due to maturation could not be gauged, but in view of the results of the previous study it was felt that the gain in range was largely due to training.

Heiliger observed that when the five-year-olds of her study were given an opportunity to pitch their songs, they always pitched them lower than they were written (93 per cent of the songs were pitched between g below middle c' and the first f' above).

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17. Jersild and Bienstock, A Study of the Development of Children's Ability to Sing, Jour. Educ. Psych., 25, October, 1934, pp 481-503.

As another approach to the determination of placement, the nine tones used in the pitch test administered by Updegraff, Heiliger and Learned were arranged in order as to relative difficulty of reproduction. These experimenters also agreed that children's voices were pitched lower than has been previously suspected for their children sang the lower notes with greater ease than the higher ones. In a phrase test administered by Williams the children made fewer errors when allowed to start on keynotes of their own choosing, which were always lower than the one used by the experimenter.

Failure to take into account the voice range of a particular child may lead to a mistaken impression of his ability to sing. In some cases observed by Jersild and Bienstock children who had been set down as incompetent singers by their teachers not only made relatively high scores, consisting chiefly of tones lower than the tones usually included in the songs presented to them, but also improved considerably after a period of special training.

Due to lack of encouragement and training, children often do not make full use of their potential abilities. A child may become accustomed to being regarded as incapable of singing and become resigned to regarding himself as unable to sing. Children undoubtedly differ in fundamental capacity and there is no reason to believe that children would be equally competent if given equal encouragement and training but the all-important principle is to

provide the environment so that whatever fundamental capacity a child has, it may be used to the fullest extent.

All experimenters who have conducted scientific research on the range and placement of the pre-school voice are, therefore, agreed that it is somewhat narrower in range than has been previously supposed and that it is placed several tones lower on the musical scale. Their studies have shown that the lower tones are sung more often and with greater ease than the higher tones. Optimum range and placement is placed about from e' to e". Many songs appearing in books will not have this range and placement and the teacher will have to be diligent in her quest for suitable and yet interesting material. While tests have shown that training will increase range, until that is accomplished, songs within the optimum range should be used. Only by doing this, will interest be maintained and greatest educational benefit result.

LEARNING SYLLABLE NAMES

Hissem made an incidental study[18] of the feasibility of teaching pre-school children syllable names. The six tones of the Deagon chime (do, mi, sol, do, mi, sol) which were identical to the pitch test tones were used. The syllables were taught visually by location and not by sound. At the end of training, two children knew all the

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18. Hissem, I., A New Approach to Music for Young Children, Child Development, 4: 1933, pp 308-317.

syllable names, four knew five, eleven knew only one and eight children were unable to name any syllables. It is doubtful that syllable training is of any value at the pre-school level.

SPONTANEOUS VOCALIZATIONS

Several investigators have made studies of the spontaneous vocalizations of pre-school children. The study made by Jersild and Bienstock[19] is of particular significance. In this study each child was observed in play for a total period of one hundred minutes divided into at least ten intervals occurring over a period of three to five months, and the verifiable notes he sounded were recorded. It was found that the children sang high tones more readily under spontaneous conditions. Of the nine hundred and fifteen tones tabulated, ninety-nine per cent fell within a range of e' first line and e" fourth space. Fifty per cent were within a range of e' to a'; fifty per cent were above a'. The notes from f' to d" were used the most frequently; a' was the single note most used. Higher notes were used more frequently in calls and outcries than in actual singing. These findings are in direct contrast to those of the formal tests both before and after training in that they show a higher placement of the voice on the musical staff under spontaneous conditions.

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19. Jersild and Bienstock, The Influence of Training on the Vocal Ability of Three-Year-Old Children, Child Development, 2: December, 1931, pp 272-291.

The children sang mostly when alone. The songs sometimes related to current activities or play and sometimes contained only repetition of syllables or words. Activities involving rhythmic motion tended to be accompanied more often by singing. Improvisations occurred more frequently than snatches of songs taught at home or at school. The frequency with which diatonic or chromatic scales occurred was small, but often enough to show that children do not limit their spontaneous singing to isolated notes. The chromatic interval occurred relatively quite frequently. The relative frequency of spontaneous singing, humming and chanting showed a negligible correlation with the frequency of overt activity and of laughter, records of which had been made available by another observer. The children showed wide individual differences in their spontaneous vocalizations.

Studies by Jersild and Bienstock, the Jersild-Bienstock Study,[20] Heinlein, Williams, Hissem, Christianson, Vance and Grandprey and Van Alstyne and Osborne have dealt with the ability of pre-school children to keep time to music or rhythmic sound patterns. A study by Jersild and Bienstock conducted over a period of three years, from 1931 through the spring of 1934, was the most comprehensive. Ninety-four children, aged two to five years, and seventeen adults were used as subjects. Among the factors investigated which might influence children's rhythmic responses were tempo and meter and the complexity of music patterns; whether best response is given by hand or by foot; age, sex and intelligence; and the effect of maturation and practice.

The study was based on a method which measured the accuracy with which children could keep time to the accompaniment of the music of an electrically-operated piano. Motion pictures were taken of the subject both when he walked and as he beat time with his hands to music. A light controlled by especially designed perforations in the music roll and that flashed on every accented beat in the music was a part of the equipment. There was also a

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20. Jersild and Bienstock, Development of Rhythm in Young Children. New York, Teacher's College, Columbia University, Child Development Monographs No. 22, 1935.

clock (the hand of which made a complete revolution every second) by means of which both the subject's movements and the accented beat could be timed. The record of each subject, then, included a picture of his movements, the light and the clock. As the film was examined, a transcript could be made of the reading of the clock when each accented beat had occurred (as shown by the light) and when each new step or hand movement had been made by the subject. If the step or hand movement was synchronous with the beat as shown by the light, the subject was exactly in time with the music and a score was recorded. If he was not in time, the exact discrepancy between his performance and the beat was indicated in units of time by the clock. A varience of five units or 5/60th second was allowed. Isolated alignment of beats and steps or claps were not credited, since it was felt they probably were due to chance. Tests were administered in units of fifty beats.

In the test on the ability to keep time as related to age and other factors, seventy-four children aged two to five years were used. Two tests of 50 beats each for hand and foot response were given for "unaltered" music and two additional tests of 50 each were given for "simplified" music. In the latter type music the roll on the piano was so arranged and blocked out that only the notes written on the beats would be sounded. The results of the tests showed a substantial increase in scores at each age level as compared with the preceding age level (TableXV).

TABLE XV

Scores at yearly age levels.*

	2 Years	3 Years	4 Years	5 Years
Number tested	19	23	13	19
Maximum score possible	400	400	400	400
Range of scores	52-139	57-235	84-239	112-280
Average score	84.5	109.4	159.8	192.8

* Music used was Amaryllis, tempo 107 beats per minute. Test was administered in units of 50 beats, equally distributed between hand and foot and between "unaltered" and "simplified" music.

When the scores for boys and girls of all age levels were compared without regard to discrepancies in age, there was no significant sex difference in the ability to keep time. When the scores were compared with all available intelligent test scores, there was a positive correlation but it did not appear to be so consistently high or consistently positive as to be significant. It was further felt that order to make a completely adequate inquiry, a greater number of children and more representative children would have to be examined. A positive correlation between rhythmic ability as measured by these tests and the ability to sing as measured by the number of tones reproduced in the Jersild-Bienstock vocal tests existed.

As has been mentioned previously, the rhythm tests utilized both unaltered and simplified music. Results indicated that the children made only slightly higher scores in response to simplified music when the scores of all age

levels were combined. The difference was small and unreliable.

To test the effect of tempo, comparisons of responses were made in keeping time to the music of the "Turkish March" played at the respective rates of 76, 107, 136, 160 and 186 beats per minute. Average scores were consistently higher for each faster tempo. The results of one test of fourteen children, aged three to four years old, on tests of the "Turkish March" played at various tempi is shown on Table XVI.

TABLE XVI

Results of tests of tempo.*

	Hand	Average	Foot	Average	Hand Plus Foot	Average
76 BEATS PER MINUTE						
Simplified	(100)	22.6	(100)	18.2	(200)	40.8
Unaltered	(100)	20.7	(100)	19.2	(200)	39.9
Total	(200)	43.4	(200)	37.4	(400)	80.7
107 BEATS PER MINUTE						
Simplified	(100)	25.6	(100)	29.2	(200)	54.8
Unaltered	(100)	29.5	(100)	26.3	(200)	55.8
Total	(200)	55.1	(200)	55.5	(400)	110.6
136 BEATS PER MINUTE						
Simplified	(100)	30.5	(100)	32.3	(200)	62.8
Unaltered	(100)	34.7	(100)	33.0	(200)	67.7
Total	(200)	65.2	(200)	65.3	(400)	130.5

* Scored on basis of margin of 5/60 second. Both simplified and unaltered forms of "Turkish March" used.

Three other tests were made with the same results: tests played at the respective tempi of 76, 107, 136, 160 and 196 beats per minute showed an increase in score with an increase in tempo. In a study by Sievers,[21] children likewise responded better to the faster tempi.

Compositions used in the tests represented three meters: 2/4 (Turkish March), 3/4 (Brahm's Waltz, No. 15) and 4/4 (Amaryllis). Fourteen children aged three to four years were tested on each of the meters and data from the tests appears in Table XVII.

TABLE XVII

Comparisons of different meters.*

	AMARYLLIS (4/4)	TURKISH MARCH (2/4)		
Tempo	107	76	107	136
Number tested	14	14	14	14
Hand (200 beats)	45.3	43.4	55.1	65.3
Foot (200 beats)	48.9	37.5	55.6	65.3
Hand plus foot (400 beats)	94.2	80.9	110.7	130.6

* Both simplified and unaltered forms used.

In each of the two meters, the differences in response are small and unreliable. On the basis of Jersild's findings, it would appear that the factor of meter is not a significant variable. In another test, it was noted that

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21. Williams, Sievers, Hattwick, The Measurement of of Musical Development, Iowa City, University of Iowa Studies in Child Welfare, 7: No. 1, 1932.

waltz time was no more difficult than other meters. From this test the conclusion may be drawn that the three meters, 2/4, 3/4 and 4/4, are practically equivalent in their effect on the child's ability to keep time to the accompaniment of music.

In comparing the scores made when subjects walked with those received when they beat time with their hands, it will be noted that foot scores slightly exceeded hand scores for the two-, three- and four-year-olds. With the five-year-olds, hand response was superior, perhaps due to greater manuel control (Table XVIII).

TABLE XVIII

Comparisons between scores obtained when subjects walked to music and when they beat time with their hands.*

	AVERAGE SCORE**	
	Hand	Foot
2 Years - 19 Tested	40.5	44.1
3 Years - 23 Tested	53.5	56.0
4 Years - 13 Tested	78.7	81.1
5 Years - 19 Tested	102.4	90.4
2-5 Years - 74 Tested	67.3	66.2

* Simplified and unaltered music used.
** Maximum Obtainable Score was 200.

A high correlation existed between scores obtained in walking and those obtained in beating time with the hands. Other tests with foot and hand response utilizing other children and various meters and tempi were made. In summary it may be said that the foot led in a considerably

greater number of tests than did the hand but this trend was not consistent nor was the difference reliable. Jersild says it cannot be concluded from these results that it is significantly more or less difficult for a child to keep time with his hands than to keep time walking.

In comparing the effect of training, a project using twenty-seven children, ranging in age from twenty-five to forty-four months was undertaken. Sixteen children (later fourteen) were placed in an experimental group and eleven (later nine) in a check group. Division was made on the basis of responses in three practice periods of 200 beats (100 hand, 100 foot) using "Amaryllis", tempo 107. The experimental group was then given extensive training for ten minutes each day for 40-50 days using the music of two other compositions. "Amaryllis", tempo 107, was again used in giving final rhythm tests to both experimental and check children. The improvement of the trained children was small as compared with the gains of the control children who had not had intervening practice (Table XIX).

TABLE XIX

Effect of training.

	Experimental Group	Control Group
Number tested	14	9
Initial tests - 400 beats	103.8	107.0
Final tests - 400 beats	130.7	128.6

The fourteen trained children were further compared with new "controls" matched to them in age and sex. The average score of the fourteen children who received training (on the second 200 beats of the final test) was 62.1; the average score of the fourteen untrained "controls" was 53.6. This difference is not significantly higher and it may be concluded that there is but little transfer of training from responding to two specific compositions to responding to a third.

As far as the results of this study were concerned, Jersild did not feel that the three-year-old child's ability to keep accurate time could be improved substantially by training of the kind and amount provided in his study. The findings further suggest that special opportunities cannot accomplish the changes that normally come with maturation and such incidental practice as a child may obtain during the course of his general experience. The authors suggest that work in the field of motor rhythm with young children should not center primarily upon cultivating the child's ability to keep accurate time, but rather upon encouraging a variety of activity and exercises, and cultivating the child's own spontaneity and his interest in participating in rhythmic activities.

The results and conclusions from the rhythm tests are an interesting contrast to the results and conclusions of the singing tests conducted by the same experimenters, especially when it is known that the studies were carried

on practically simultaneously and that all subjects were drawn from the same nursery school and were, therefore, quite similar in age, intelligence and home and school background.

THE WILLIAMS STUDY [22]

A williams study concerned itself primarily with the measurement of rhythmic performance, chiefly as to age, sex and intelligence differences, in terms of a graphic record of their attempts to tap synchronously with a mechanically-sounded periodic pattern. The Seashore motor rhythm apparatus, modified in certain respects to meet the requirements of work with young children, was used to secure graphic records of regulated hand movements.

Subjects used were two hundred and three children, one hundred and fifty-nine of them three to six years of age. The simplest pattern which may be represented musically by quarter notes (♩ ♩) in 2/4 time was used because a preliminary study had shown a practically universal failure of pre-school children to respond to more complex patterns. The study dealt with adjustment to change of speed rather than to a complexity of pattern. This stimulus for response was the tick of a clock and each child was asked to tap a circuit breaker with a hammer in exact time to

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22. Williams, Sievers and Hattwick, The Measurement of Musical Development, Iowa City, Univ. of Iowa Studies in Child Welfare, 7: No. 1, 1932.

its ticking. Intervals between ticks were variously spaced at .50, .67 and 1.00 seconds. A magnet recorded the tapping from which a score was computed for ten revolutions.

The findings revealed a significant age difference in the per cent of failures found, ranging from approximately 75 per cent at the age of three to practically no failures at six years. Absolute accuracy of tapping was lower at the slower speed. Contrary to the usual tendency, girls did not tend to succeed at an earlier age than boys. However, a greater percentage of boys throughout the age range failed. The relation to accuracy to the mental age even at three years was extremely low. There was high correlation between hand and foot scores.

Three other testing techniques were used including observation al technique of accuracy with which children were able to adjust the rate of walking to musical stimulation and a cinematographic technique which photographed a metronome with a swinging pendulum and the movement of the hands. A phonophotographic technique by which the sound of a child's footsteps recorded as well as his picture was also used. The results secured by these techniques coincided with those of the graphic technique.

Williams made no tests on the effect of training. He significantly concluded, however, that vocal rhythm, especially in complex patterns may develop earlier than hand rhythms. Sievers, who was an associate of Williams at the

University of Iowa, also made rhythm tests[23] (but with children 7-14 years) and concluded that a limited amount of coaching and practice had practically no effect upon performance.

THE HEINLEIN STUDY[24]

Christian Paul Heinlein reported his work on the rhythmic responses of children, which was completed in the Psychological Laboratories of John Hopkins University in 1928. He had felt that the observational method of determining children's responses was extremely unreliable ("illusions in judgment existed which made a need for some exact measuring devise apparent") and in order to enable objective measurements to be made, he devised and set up an electro-magnetic apparatus by means of which he obtained exact records of the individual rhythmic performance of eight pre-school children (age range of 3 years, 10 months to 5 years, 3 months) in marching to music played by a Duo-Art reproducing piano. The test interval was fifteen seconds and with only two children was there exact temporal coincidence of musical beat and foot movement.

This study affirms the findings of others to the effect that the rhythmic response of pre-school children is not developed to any great extent. He made no study as to what

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23. Williams, Sievers and Hattwick, The Measurement of Musical Development, 1932.

24. Heinlein, Christian Paul, A New Method of Studying the Rhythmic Responses of Children Together with an Evaluation of the Method of Simple Observation, Ped. Sem. & Jour. Genet. Psych., 36: 1929, pp 205-223.

the effect of training would be or a change of tempo or meter.

THE HULSON STUDY [25]

The Hulson study was undertaken in 1929 for the purpose of determining whether children's rhythmic performance in walking, running and skipping to music was more easily attained at any one tempo or series of tempi. Her subjects were twenty-one four-year-olds. Piano music, the speed of which was governed by a metronome set at various tempi, was used as stimulus. A child was considered successful in maintaining a rhythm at a given tempo when in the observer's judgment his foot touched the floor in consecutive steps in coincidence with the beat of the music.

Her findings showed that each activity had its own tempo with which best results were obtained and that training presented possibilities of increasing the range of adaption. Hulson gave the following tempi as the most conducive to rhythmic responses with her subjects:

	Best at Outset	Best Later	Limits*
Walking	126-132	132	84-200
Running	112-116	112	88-144
Skipping	116	132-136	100-160

* Slowest and fastest tempi at which any child made rhythmic response.

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25. Hulson, Eva Leah, Tempo in Rhythm for Young Children, Childhood Education 6: 1929, pp 78-80.

THE VAN ALSTYNE AND OSBORNE STUDY [26]

The Van Alstyne and Osborne study undertaken under the sponsorship of the Universities of Chicago and Harvard and reported in 1937 evaluates the rhythmic response of Negro and white children to a given rhythmic pattern. Almost five hundred children aged two and one-half to six and one-half were tested. An adaptation by Williams of the original Seashore device for testing was used except that clapping blocks were substituted for the tapping hammer. A new type of test called a free rhythm test was given as well as the type given by Jersild and Bienstock, Williams, Sievers and others, which was a regulated test. The latter consisted in performance in time to a constantly sounding stimulus, whereas the new type consisted in the performance of rhythm after the stimulus had ceased. The patterns given consisted of mechanically-sounded beats with no variations outside of the main unit.

From their findings the experimenters concluded

1. Negro children are much superior to white children in the simple rhythmic patterns of fast and slow speeds.

2. The difference is much less marked in the response to the complicated rhythmic patterns.

3. The difference is much less apparent in the five and one-half to six and one-half year age group

4. Negroes especially excelled in the regulated rhythm series in contrast to a somewhat lesser response in the free rhythm test.

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26. Van Alstyne and Osbourne, Rhythmic Responses of Negro and White Children Two to Six, Washington: Soc. for Research in Child Development 2:4, Serial No. 11, 1937.

5. In the simple rhythm patterns, there was a greater tendency to "anticipate" rather than "delay" response.

6. In the more difficult patterns, there was a great tendency to "delay" response.

7. Both types of responses (anticipated and delayed) are twice as frequent in the free rhythm series as in the regulated series, and

8. Fast rhythm pattern was best for both white and colored children.

According to the accuracy score method devised by the writers, all Negroes responded about 50 per cent better than the white children in the fast rhythm pattern (50 second intervals) in all age groups, and in the slow rhythm pattern in the four and one-half to six and one-half age groups. The Negro children aged two and one-half to four and one-half years responded about one hundred per cent better than the white children on the slower speed. In an attempt to find some explanation for the great superiority of the Negro children, Musical Background Questionaires were filled out. The findings were consistent in revealing that the Negro children had a higher degree of musical participation and training in the home. It was also thought that hereditary and racial characteristics might have exerted some influence as well. The effect of such limited practice as a repetition of tests would give was noted for twenty-one white and twenty-seven colored children in both the simple and complicated series and it was insignificant.

Hattwick found that children learn pitch discrimination by starting at their own pitch level and then, through training, reaching new levels. Van Alstyne and Osborne suggest that it is also possible that children learn to keep accurate rhythms by first practicing them in their own time and then gradually learning to make them conform to a time stimulus. Whether this timing achievement is the result of maturation or training, the authors feel further research will reveal. If it be true that a child will learn best by practicing rhythm in his own time, then the practice of attempting to teach rhythm by means of the rhythm band would be positively harmful. The authors feel that the best method is to allow the child to assimulate the whole structure of the rhythm pattern at his own rate of speed rather than by drilling it "into him" bit by bit at some arbitarily-set speed. These findings are in accordance with the principles of educational philosophy concerning individual development as against the insistence of group reaction regardless of individual differences. The findings imply that children should be given opportunities for building and expressing rhythm individually in response to all sorts of material and stimuli in informal situations, i.e. rhythm in language, in block building, hammering, swinging, as well as to simple musical compositions. They imply also that the rhythmic response of the individual child should be taken into account as well as the responses of the majority of

the group. Both individual and group responses should be developed.

In regard to particular rhythm patterns, the authors draw certain implications for education. They claim if it is necessary for children to achieve seventy-five per cent accuracy on the rhythm test before a pattern is introduced, none of the patterns, except those of fast rhythm should be given children before the age of six and one-half years. If a standard of fifty per cent accuracy is taken, Negro children may be taught fast rhythm sometime before four and one-half, possibly about four years; white children about four and one-half years. Negro children may be taught the slow rhythm sometime before four and one-half, possibly about four years; white children at about five and one-half years. These are the ages indicated if children are allowed to use their own timing. If they are expected to keep exact time, the ages at which certain rhythms may be taught are deferred. Negro children may be taught fast rhythm at four and one-half years; white children not before six and one-half years. Neither Negroes nor white children should be taught the slow rhythm pattern until after the age of six and one-half years.

The authors conclude by pointing out the implication of their study for general psychology: children first learn a total structural organization rather than the elements of the structure.

THE HISSEM STUDY [27]

In conjunction with her vocal tests, Hissem did some work in determining the rhythmic response of twenty-seven pre-school children, aged 21-54 months. A model of tone and rhythm in the most simple terms was presented which the child reproduced as accurately as he could both vocally and by playing it on the gong. The following patterns were presented: a slow, even, half-note pattern; a fast, even, eighth-note pattern; a combination of the slow and fast pattern and various other more complex patterns.

After training, three children could play the entire group of patterns and could also invent patterns, four children could reproduce four patterns, the balance could reproduce only one or none. Hissem noted a definite correlation between ability to match tones and rhythmic discrimination.

THE VANCE AND GRANDPREY STUDY [28]

In the hope of determining what responses children can make and thus be able to adapt the activities of the nursery school more closely to their capacity, a study of thirty-one children enrolled in the nursery school at Iowa State College was undertaken by Vance and Grandprey about 1930. Records were secured on the following abilities:

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27. Hissem, Irene, A New Approach to Music for Young Children, Child Development, 4: 1933, pp 308-317.

28. Vance and Grandprey, Objective Methods of Ranking Nursery School Children on Certain Aspects of Musical Capacity, Jour. Ed. Psy. 1931: 22, pp 577-585.

1. Imitating the teacher in beating rhythmic patterns (13 were evolved from melodies appearing in a song book for young children) and beating time to phonograph music with a triangle.

2. Imitating the teacher in singing an interval.

3. General responses (including speech and bodily movement) to music played on the phonograph in reply to the question, "What can you do to that music?".

4. Responsiveness to music introduced when the children were engaged in other spontaneous interests and during the regular music period when the children were encouraged to participate, and

5. Ratings based on opportunities for experiencing music in the home environment.

Graphs were drawn to portray differences found in individuals paired according to identical age. The writers have not attempted to predict musical ability, but hope to correlate these scores with those secured in ten or fifteen years through use of the Seashore measures.

In the observations planned to test the children's rhythmic perception, they concluded

1. That the rhythmic pattern test as a measure of one aspect of musical capacity is suited to use with young children.

2. That some rhythmic patterns are more easily reproduced by children than others, and

3. That capacity to sense rhythm is not closely dependent on age or intelligence.

The median was progressively higher for each age level. The best response on a single pattern totaled forty-nine out of a possible one hundred and twenty-four. Patterns in which quarter notes preceeded the half notes received higher scores than those in reverse order.

In the singing tests, scores for descending intervals were higher than for ascending intervals. The authors felt that singing behavior directions to children and having them sing a response could be used as a measure of a child's ability to sing. In the singing, interpretative, and responsive tests, results were inconclusive and better methodology was indicated.

The results did not indicate a close relationship between home environment and musical capacity. They did indicate, however, that children of the same age and intelligence rank vary in musical capacities and also that the same child may not possess all types of musical capacity in the same degree. Vance and Grandprey do not recommend singing and rhythmic tests below the three year level since they feel there is a chance of measuring maturity rather than aptitude.

THE CHRISTIANSON STUDIES [29]

Helen Christianson did her first research work in San Francisco in 1929-30 while developing techniques of study applicable in the play environment of certain pre-school children. Her study[29] was designed to

1. Study the duration of rhythmic response at various age levels.

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29. Christianson, Helen, Music (In) The Pre-School Child: His Development and His Guidance. Mills College Bulletin 1928, Series 18, No. 6, pp 119-124.

2. Observe evidences of emotional response to the music situation, and

3. Compare the rhythmic responses of children with reference to nationality backgrounds.

Ninety-three children enrolled in nursery school, kindergarten and junior-primary groups, were observed in walking, galloping, skipping and dancing to four selections, three meters and four tempi and the steps made in time to music were recorded. Final score was the highest continual response.

After the responses had been tabulated for comparative purposes, the following conclusions were drawn:

1. Difference due to nationality seemed of minor importance as compared with differences due to age, sex and certain personality traits which tended toward inhibition or toward spontaneous, wholehearted bodily rhythmic activity.

2. The nursery school children were more successful in synchronizing their movements with fast tempi than with slow ones and they were more successful in walking, running and galloping activities than with dancing. It was thought that perhaps the dancing called for greater initiative and that that was the cause of the poorer response, and

3. A fairly regular progression in duration of rhythmic response at successive age levels suggested the need for more intensive observation and experimentation under conditions in which correlational methods could be applied.

Miss Christianson made an extended study[30] on the bodily rhythmic movements of young children in relation to the rhythm in music as a part of her doctorate work at

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30. Christianson, Helen, Bodily Rhythmic Movements of Young Children in Relation to Rhythm in Music, Teacher's College, Bureau of Publications, 1933.

Columbia University, published in 1938. Systematic observation was chosen as the most suitable technique, since it was felt that any analysis of curriculum needs should be made with reference to the total behavior situation. The experimentation and observation was carried on in both private and public school situations and with set-ups which were highly conducive to spontaneous activity and creative expression of ideas.

In one school, twenty-six kindergarten children were given three twenty minute music periods each week, during which the children were encouraged in various types of activity, including bodily rhythmic movement, singing, appreciative listening, individual song composition and invention of dance patterns. In a nursery school, the experimenter spent the major part of each day with a group of sixteen two- and three-year-olds. Music was used spontaneously throughout the day whenever it seemed to either teacher or children to fit into some play situation. There was also an informal music period of about ten minutes duration, in which the children were free to participate or not as they choose. A group record was kept of the verbal cues for music and also individual records of a child's rhythmic pattern which was revealed by means of pictographs and supplementary verbal description. From an analysis of individual responses, a scale was evolved for the purpose of rating each of the following aspects of overt responses to musical stimulation:

1. Synchronization of movement to rhythm in music

2. Dramatic play in connection with bodily rhythmic activity.

3. Spontaneously-evolved dance patterns.

4. Social-emotional responses as shown in facial expression, posture and movement in the musical situation, and

5. Interest and enjoyment as shown by verbal requests and comments.

Five nursery school and five kindergarten children were individually rated by this scale. Ratings were based on records of approximately one month. Average scores for the five headings listed above were added to give a total score for responsiveness to music as shown in bodily rhythms. The maximum obtainable score was 25. In the nursery school, range in the total scores was from 10 to 15.8; in the kindergarten, 13.1 to 17.9.

During the second year, additional children (8 two-, 8 three-, 7 four- and 9 five-year-olds) were observed for ten observations of ten minutes each and the rating scale was further refined. Average scores for these thirty-two children at yearly levels from two through five years were 7.38, 9.69, 10.89 and 12.42 respectively. These scores show a considerable progression with age. The widest range in total scores at a single age level was found in the three-year-old group. The girls held a slight edge over the boys, but it was not large enough to be statistically reliable. There was no relationship between intelligence quotients and the factors scored in bodily rhythmic responses. No experimentation was carried on on the effect of training.

In closing, Miss Christianson makes the following conclusion:

> "Experiencing music experimentally and creatively through bodily rhythmic movement is one of the most important (yet often neglected) phases of the young child's musical development. The ability to use one's body as an instrument to express subtleties of feeling, thought, and movement is highly desirable for social-emotional growth, and affords a truly satisfying means for creative expression at an age when some form of motor activity is still the primary response to most stimuli."

SUMMARY OF STUDIES IN RHYTHMIC RESPONSE

In ability to keep exact time in walking or with hand movements to beats of music or a rhythmic sound pattern, the findings indicate that there is a steady increase in ability with age during pre-school years. Sex and intelligence were shown to have little or no bearing on rhythmic response. One study showed Negro children to be greatly superior to white children in simple rhythmic patterns of fast and slow speeds. Several studies have indicated that children are not significantly more accurate in responding to music of a highly simplified character than in responding to the same composition in unaltered form. Tempo was found to make a difference in the scores, the best responses coinciding with the fastest tempi. The children did substantially as well in responding to one meter as in responding to another. Foot response was superior to hand response, but the difference was not great. A positive correlation existed between rhythmic

and singing ability. A high correlation existed between foot and hand scores. Equipment designed to measure rhythmic response proved the judgment of observers to be highly unreliable.

Training in response to a rhythmic pattern over a period of time did not substantially improve ability to keep exact time. From the studies made it did not appear, for example, that training could raise the performance of the average three-year-old to that of the average four-year-old, as was shown possible in the singing studies. From the results of the tests in the field of motor rhythm, it would seem unwise to concentrate upon cultivating a child's ability to keep accurate time. It would be far wiser to provide opportunities for and to encourage a variety of rhythmic activities and by means of this approach to cultivate the child's interest in participating in further rhythmic activities.

Several aspects of the Christianson study also measured socio-emotional responses to music. It was observed that the use of markedly rhythmic music helped some shy children to become more expressive and to participate more freely in group activities. Through continued experience with music, the simple spontaneous dance patterns invented by the children frequently evolved into more complex movements. As was stated, there was an increase in response at yearly levels. Children's requests for music may be used as a criterion of interest in music. It was interesting to note that they provided the stimuli for thirty-three per cent of the music at the two-year level; fifty-three per cent at the three-year level. In the kindergarten, the requests dropped to twenty-five per cent. Whether this drop was due to normal development of the child or to an increasing formality in the school situation, the results do not indicate. Hattwick similarly noted a decline with age in spontaneity in musical activities and that children became increasingly reluctant to sing on request.

The Updegraff, Heiliger and Learned study[31] points out that it has been demonstrated experimentally that preschool children have improved in singing ability when trained intensively, but raises the question as to whether

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31. Updegraff, Heiliger, Learned, The Effect of Training Upon the Singing Ability and Musical Interest of Three-, Four-, and Five-Year-Old Children, (in) R. Updegraff, et al. Studies in Pre-school Education, I. Iowa City: Univ. of Iowa Studies in Child Welfare, New Series No. 346, Vol. 14, Pt. III, pp 85-131. 1937.

or not an increase in interest accompanies the improvement in ability. They further ask if it would not be preferable to allow ability to develop without specific stimulation rather than perhaps to endanger a future interest in music. In an attempt to answer these and other questions their study in singing previously reported in part was undertaken. In addition to the records kept on pitch, interval and phrase response, daily record cards containing items of expressive behavior indicative of degrees of interest or disinterest were kept for each child. These cards were originally devised by Updegraff and Williams and were adapted for use in this study. In the beginning many of the children were shy, negative, or distracted, but as the training progressed the large majority became interested and entnusiastic. Usually high interest was accompanied by excellent effort. The three-year-old children were usually willing to go to the testing room with the experimenter. If they were not, they were not coerced and frequently on the next day the child would make a request to go. Four- and five-year-old children were always ready to go.

As a further aid in estimating interest an observational blank was devised on which was entered all signs of interest displayed or satisfaction, enjoyment or appreciation shown by the children. Such items of behavior as facial expression, fixation, participation, gross bodily movement and verbal responses were carefully observed and

rated in accordance with the relative importance of various items as indicators of interest. The highest possible interest score was 1.00.

This study was conducted with experimental and control subjects and at each age, the experimental groups showed an increasing interest in the musical activities of the school. During the same time, the interest scores of the control group reflect little or no change in attitude. By the end of the thirty- to forty-day training period, the difference between the two groups was statistically significant. (Table XX)

TABLE XX

Mean interest ratings of experimental and control groups of three-, four-, and five-year-old children.

	Experimental Group Mean	Control Group Mean
THREE-YEAR-OLDS		
Initial rating	.58	.53
After fifteen days	.58	.48
After thirty days	.65	.50
FOUR-YEAR-OLDS		
After fifteen days	.61	.42
After thirty days	.80	.49
FIVE-YEAR-OLDS		
After fifteen days	.52	.52
After thirty days	.64	.55
After forty days	.64	.53

Highest possible score -- 1.00

Increase in ability that came with the training of the experimental group gave the children more self-confidence,

a desire to participate in music activities, a greater interest in learning and a greater apparent enjoyment in music. These effects were not only evident during training but they also appeared to carry over to the customary music activities of the nursery school from which the subjects were drawn.

In his Measurement of Musical Development under the section entitled Tests of Emotional Responsiveness, Williams discusses the measurement of interest. He points out that individual differences might be measured by a variety of means: relative amount of time spent in playing with musical instruments or apparatus, frequency of occurrence of spontaneous activity of a musical type, per cent of voluntary attendance at a group music period, the carry-over effect after the music period or in requests for music.

One group of pre-school children was observed as to the per cent of attendance at an informal music period where each child was permitted free choice between it and a variety of other types of play activity occurring at the same time. The observations were conducted over a long period of time, in order to offset the factor of novelty and also to satisfy the requirements of statistical treatment. The total percentage of attendance for the twenty-nine two- and three-year-old children observed ranged from 14 to 100 per cent over twelve observation periods ranging in length from seven to twelve months. Williams points out a great

number of other factors which seemed to affect the interest score of individual children and which, therefore, makes acceptance of the per cent of attendance a misleading criterion of interest.

As a further attempt to measure individual difference in interest, Williams worked out a chart of descriptive categories and weights. Possible scores ranged from 0 to 20. The mean of observations made by Williams was 14.8 and he felt that this technique offered possibilities for rating individual difference in musical interest.

Williams cites as another criterion of musical interest the amount and kind of spontaneous musical activity of the child. For the purpose of recording activity of this sort, he devised a chart on which appeared the name of a child, stimulus or accompanying activity and a musical staff and space for entering a description and interpretation of a spontaneous activity. These showed up rather large individual differences in the amount of spontaneous musical activity to be found among children.

Williams concluded by saying that the only satisfactory method for determining individual differences in interest or musical responsiveness is to sample as widely as possible by various techniques, using test or rating devices only with full knowledge of their limitations.

In practically all of the studies made to determine the effect of training, the experimenters have reported that increased performance has been accompanied by

increased interest. There has been no indication that future interest in music has been endangered by such training. On the contrary, there is every reason to believe that training has developed an interest and an ability that will bring happiness and satisfaction to the child throughout all the years of his life.

STUDY IN INSTRUMENTAL TRAINING [32]

Genetic studies of music among pre-school children have been almost exclusively restricted to vocal and rhythmic performance. One study, however, concerns the instrumental reproduction of melody and was made by Martha Guernsey Colby in 1935 under the sponsorship of the University of Michigan Psychology Department. The original purpose of her study was to determine the extent to which pitch discrimination of diatonic intervals could be coördinated with simple motor habits in melodic reproduction by young children. The nature of early results, however, rapidly turned the study into a more general experiment in musical training. The experiment did not concern itself with tests of isolated sensory capacities, but rather with the perception, retention and execution of melodic pattern. Perception presupposed pitch discrimination, direction and intervals between successive notes.

The subjects were sixteen children, eight of each sex and between three and one-half and four and one-half years of age. Mental age was relatively close and social background was similar. Musical background varied considerably. The instrument used was a tin fife consisting of six holes which by combination could produce the C-major scale through several octaves. The experiment started with

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32. Colby, Martha, Instrumental Reproduction of Melody by Pre-School Children, Ped. Sem. & Jour. of Gen. Psy., 47: 1935, pp 413-429.

two daily class drills of fifteen minutes each. After six weeks, differences in individual stages of development made it necessary to divide the class into an advanced group of five children and a less advanced group of eleven. This latter group was later decreased to nine when two children showed not the slightest interest nor proficiency. Eventually it was necessary to abandon group instruction altogether for individual lessons.

Experimental procedure arranged itself in the following general divisions: introduction to the instrument, "blowing" drills for the mechanics of posture, breathing and fingering, matching pitches, pitch discrimination, two-unit diatonic "finger-games" and melodic reproduction.

Some twenty-five melodic patterns were used. When it became apparent that patterns involving intervals beyond the sixth were too difficult for the group as a whole, the number of patterns was reduced to twelve. Chromatic intervals were not included. It was noted that patterns consisting of more than four notes were difficult for most children. Ascending intervals were easier than descending ones and diatonic progression was much easier than skips of a fourth, fifth or more. It seemed evident that difficulty in perceiving, remembering and executing was directly proportional to total complexity of design. All children tended to simplify melodic contour and also to persevere with a familiar pattern while learning a new one.

At first, the rate of progress was quite rapid. At the end of the first month, all subjects except two could

reproduce most of the melodic patterns within the restricted compass of the major third. As the training progressed, some children mastered a few additional patterns and one child was able to master all twelve patterns plus six additional tunes and an assortment of small "original" melodies which he repeated often. These were mostly composites of other tunes.

At the end of the experimental period, the children could sing more melodies than they could play which showed a striking difference between vocal and manual reproduction. When the experimental progress became quite lacking midway in training, it was thought to be due to the difficulty encountered by those with very short fingers in covering more than three holes at once and also to the fact that the limit of auditory-manual coördination appeared to have been reached for some children.

Mrs. Colby appraises her experiment by concluding that specialised instrumental training at too early an age (pre-school) costs far more patience than it is worth. She felt that the same amount of effort applied to vocal acquisition of folk songs and other melodies would produce greater results because it would capitalize on a natural response and an easier technique. On the other hand, she feels that a "minimal amount of auditory-manuel training" under appropriate conditions might foster an interest in instrumental music and probably deepen it's aesthetic value later on.

STUDY ON THE APPLICATION OF THE SEASHORE MEASURES [33]

In attempting to determine the musical capacity of pre-school children, it was inevitable that someone would investigate the possibility of using the Seashore measures. Since the measures had been designed for use with adults and older children (fifth grade and above), it was necessary to adapt them to the maturation level and interest span of younger children. This task was undertaken by Esther McGinnis in a study reported in 1928. Miss McGinnis was also interested in determining what reliability and validity the results of any adaption would have. The tests selected for use were those on intensity, pitch and consonance and they were administered individually on two occasions to sixteen children enrolled in the Nursery School of the University of Minnesota Institute of Child Welfare. The group included eight boys and eight girls with an age range of 41-59 months.

Miss McGinnis encountered four difficulties in giving the tests:

1. The length of the tests.
2. Inability of the children to understand the terms "high" and "low".
3. The uninteresting nature of the test materials.
4. Omitted responses.

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33. McGinnis, E., Seashore's Measures of Musical Ability Applied to Children of Pre-School Age, Amer. Jour. Psy.: 40: 1928, pp 620-623.

She overcame the first difficulty by so marking the records that they could be used in two parts. The higher and the lower tones were called "baby bear" and "daddy bear" respectively, the child reporting which voice gave the last note. To overcome the uninteresting nature of the material, the tests were made into games. If too many omitted responses occurred, that section of the test was repeated.

McGinnis reported the per cent of correct responses on the best trial of the tests for pitch, consonance and intensity as ranging from 50.5 to 62.2, 39.6 to 68.0 and 51.2 to 65.3 respectively. She concluded that with suitable modifications, particularly in the direction of shortening the records and increasing the intervals between judgments, it appeared possible that these tests might become valuable research instruments for use with young children.

SUMMARY OF STUDIES IN PRE-SCHOOL MUSIC

Almost thirty studies on pre-school children have been reviewed on the foregoing pages and they have covered a wide range of subject matter. From them it has been possible to learn

1. Musical capacity at the various age levels.
2. Improvement possible through training, and
3. Methods of training most profitable.

This is vital information for the music educator interested in setting up a training program for pre-school children.

The studies have revealed potentialities heretofore unrealized; they have indicated that it is possible to give systematic training and opportunities calculated to increase a child's competence in music with worthwhile results and that, with proper care, gains in ability will be accompanied by increased interest and enthusiasm. They would seem to prove that a "downward" trend of education in the music field is entirely feasible and wise.

A SUGGESTED CURRICULUM FOR THE MUSIC TRAINING of PRE-SCHOOL CHILDREN

A large amount of scientific data has been presented and it has been of convincing nature and yet it is felt that the caution as to the proper use of such data made by Arnold Gesell, Yale psychologists, has a place in this section. He writes,

> "A rational approach to the problems of child psychology can remove many misconceptions but it is not infallible. There is always a temptation to overuse new-found scientific data. For example, an excessive emphasis on the measure of intelligence has tended to blind us to other very important factors in the child's economy. Individual differences in personality make-up, in emotional predispositions and in innate growth characteristics demand more considerations particularly in children of pre-school age. A superficial adoption of the doctrines of the conditional reflex and of habit training likewise has led to faulty aims and methods of child care. Even the modern nursery school is too much influenced by a conventional psychology of learning and by traditional patterns of public school organization. The pre-school child is in danger of being regarded as a miniature school child. The only corrective for this danger is an increased insight into the distinctive developmental needs and hygiene of the early years." 34

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34. Gesell, Arnold, The First Five Years of Life, New York, Harper and Bros., 1940.

We have attempted to provide this information earlier in this paper and its use in combination with the scientific data also presented should insure background and depth of understanding on which to build a curriculum of maximum educational effectiveness.

No attempt should be made to formulate a curriculum without first having in mind the objectives of such a program. Simply stated, the prime purpose is to have children enjoy music as an integral part of the day's activities. Upon this foundation all future advancement must be laid. Satis Coleman writes that the true educator, whether parent or teacher, is concerned with the child's development from his own level and in his own capacity and that it should be the combined efforts of the parent and the music educator to see that the child is given ample opportunity for music experiences at that level.[35] Updegraff writes in a similar vein by saying that the teacher should be conscious of including music in the school environment and of trying to stimulate that degree of participation by a child which is within his ability and which is coincident with his enjoyment.[36] It is hoped that a child will soon learn to respond easily to the beauty of a simple melody, that he will be able to express himself in a clear free voice and that he will remain free of all self-consciousness

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35. Coleman, Satis, Your Child's Music, New York, John Day Co., 1939.

36. Updegraff and others, Practice in Pre-School Education, New York, McGraw-Hill, 1938.

when he sings. Seashore writes that at the end of five years the musical child should have gradually acquired a sense of appreciation for musical sounds, pleasure in self-expression in musical intonations, confidence in his ability to compose a tune, some proficiency in singing and some degree of satisfaction in free playing with an instrument. He further cautions to "let the emphasis lie upon the broadness of the meaning of music to the child, upon the child's learning by doing at his natural level of successful achievement, and upon the utilization of natural motivation in place of formal instruction." [37]

Seashore further writes that musical activity is basically a form of play -- an expression for the satisfaction in the expression itself without ulterior motive. If this attitude can be carried through life, so much the better. It does not free one from effort, but if the driving motive can be found in play, much of the drill and effort necessary will be pleasure. With pre-school children, the play situation provides an ideal approach for music training. [37]

In building a music curriculum for young children, certain challenges must be recognized. Individual differences exist. Differences within a given age group are often greater than those between two age groups. If our curriculum organization is to be of greatest effectiveness,

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37. Seashore, Carl E., Music Before Five, Univ. of Iowa, Child Welfare Pamphlet No. 72, 1939.

it must provide an enriched program for all children notwithstanding individual differences. A further challenge is the fact that the needs, interests and potentialities of the pre-school child expand tremendously almost from week to week through the processes of maturation and experience. We must build curriculum, but it must be flexible as to environmental arrangements including materials, possible experiences and guidance to suit the need and interest of the moment, and at the same time work toward the objectives of music education. As an additional challenge, the social life of the pre-school child is also changing and this too must be considered. Some account must be taken of the attention and persistence span, for in pre-school children it is relatively short. They cannot carry activities over from day to day with any marked continuity of effort. By five years of age the attention and persistence span has lengthened and some emphasis can be placed on remote goals and projects developed that carry over from day to day.

Guy Montrose Whipple enlarges upon the scope of the challenge by writing,

> "The fitting of instructional items and activities to the developmental level of the child in such a way as to secure maximal educational effectiveness is certainly one of the most complex and likewise one of the most crucial problems in curriculum making. Ideally, it presupposes precise knowledge of hundreds of details of the process of maturing over a broad range of physical and mental traits; it draws extensively upon our knowledge of child psychology; it demands full familiarity with individual differences; it necessitates skill in the techniques of measurement; it compels exhaustive classroom experimentation;

> it inevitably reaches into the facts and principles of sociology for guidance; it likely implies adherence -- even though it be not explicitly recognized -- to some underlying principles of political and educational philosophy...the consciousness of this intricacy of the factors involved in curriculum-building and of our distressing ignorance of the factors themselves, and particularly of their reciprocal interactive effects when built into an educational system, has long bred a spirit of humility ...the outcome bears, it would almost seem, a relation to an ideal educational instrument about like that of a child's home-made push wagon to a modern stream-lined flyer." [38]

This scientific approach Whipple recommends has been taken in the field of pre-school music and the various tests made have been outlined in a previous section. They have revealed that pre-school children, at least from three years on, can be given music training with not only worthwhile results but with a gain in interest as well. They have also shown what methods of training are most effective. Armed with this information, the task of building a music curriculum is much easier. A discussion of the physical setup and materials needed will be first presented.

In setting up a program of music training, two things are necessary: an environment suitable for music experiences and an adult sensitive to the possibilities for music experiences in that environment and willing to help the child build upon them. The physical space for music

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38. Whipple, Guy Montrose, Editor's Preface - Child Development and the Curriculum, National Society for the Study of Education. Thirty-Eighth Yearbook, Pt. II, p ix.

training should be large in area and unencumbered. It should be light, dry, warm and clean. It should contain nothing that the exuberant activities of pre-school children could readily damage. The floor should be of a material which can be easily and thoroughly cleaned, for children will use it for many purposes other than walking. Equipment should provide opportunity for gross rather than fine muscular coördinations. There should be a piano, a phonograph, a chromatic pitch pipe, music books, records and toy instruments. Then there will be need for an endless variety of materials for play activities: blocks, balloons, scarfs, balls and the like. Not all of this material should be available all the time but rather should be brought out as a need arises.

Seashore points out that to give a child musical environment means not only exposure to formal music but rather a motivation for hearing musically all sounds around him, for acting rhythmically, and feeling the rhythmic impulse in all forms of activity, for responding by imitation or other forms of appreciation to all sounds beautiful.[39]

MATERIALS

The music materials should be of good quality and they should have educative value. There is such an abundance of

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39. Seashore, Carl E., Music Before Five, Iowa City, Univ. of Iowa Pub., New Series No.1056, 1939. Child Welfare Pamphlet No. 72. Reprinted from the Parent's Magazine, 1939, 14, No. 3, 21; pp 65-96. (March).

material available that the problem is to select from it what is best-suited to the child's growing capacity for understanding. Music for young children should be strong in rhythm, simple in melody and harmony and the selections should be short enough to lie within the child's limited span of attention. Music of symphonic proportions with heavy instrumentation, dissonant harmonies and complicated rhythms is not suitable for use with pre-school children. Neither is some of the music of the contemporary school for it is of a character that would confuse and overly-stimulate children.

Materials should be progressively graded and they should fit in with the social background and experiences of the children. Selection will also hinge upon equipment. Equipment should be in good order -- piano accurately tuned to standard pitch and phonograph records in good condition. Material should have correlative value. This is particularly important, as the most natural and effective musical approach is through play activities. As previously mentioned, selection of materials should be made for individual differences. It should be remembered that children like rime and repetition in their songs. The pitch range and placement of the pre-school voice has been thoroughly discussed in the studies reviewed and it seems to have been proven that children can sing lower than was once believed, that narrow intervals are sung more readily than wide ones and descending intervals more readily than ascending. This

means that song material should be analyzed with these facts in mind and at first only that presented that is well within the range and placement of a particular individual or group. This may mean transposition to either a higher or lower key or perhaps not using it at all until a later date. If training later increases range and raises pitch level as the tests have shown that it will, then songs possessing these characteristics may be presented. If a child has only a limited tonal range, chromatic intervals should be introduced as a means of providing greater variety and avoiding monotony.

The music should be strong in rhythm. It should not be so complex as to be confusing or so simple as to be uninteresting. Phrases should have musical balance and yet must not be so long as to tax the breath. Quality and character of the text should be examined to make sure it is within the understanding of the pre-school child and that it is appropriate. Occasionally the child should be taught hymns or patriotic songs. He won't understand the words but the spirit they will instill in him will be an important influence in his life. Accompaniment should be of simple structure and should support or follow the melody.

In the appendix a list of song and rhythm books is given which have been examined by the writer and felt to be suitable material for pre-school use. A wealth of ideas for presentation and adaption are given in each book and either parent or teacher will find them easy to use.

METHOD

Vastly more important than any other phase of music training is method, for it requires the greatest discernment on the part of the teacher and the greatest skill in administration. Experience has shown that the flexible and informal situation provides the best environment for music training of pre-school children and that results are more easily achieved in working with the individual or in small groups. When the children are called together for "music time" the period should not be for more than fifteen to twenty minutes depending on interest, and a child should be allowed to come and go as he pleases. It must be remembered that the child's attention span is limited and that to hold his interest the activities of "music time" must be varied.

Emphasis should be upon spontaneity, originality and freedom of expression rather than upon the learning of skills. No attempt should be made to bring all children to the same musical level, for it cannot be done. Whatever musical abilities a child may possess should be ascertained and work started at that point. In the most elementary aspects of teaching, the foundation often needs to be laid by the teacher, but in all teaching one should proceed from the simple to the complex and at a pace no faster than a child indicates readiness. To confront a child with tasks for which he is not ready, with the implication that he should succeed, gives him a feeling of failure and undermines his security. Rather we must guide him

into learning situations that he can attack effectively and with sufficient success to yield satisfaction, encouragement and growth.

It is unwise and impractical to hold up older or more advanced children as examples, since competitive tendencies do not appear until about the fifth year. Sometimes, however, a child will respond more readily to the voice of another child than to that of an adult and often an inhibited child will respond favorably to the opportunity to sing with another child. In this instance a relatively good singer should be paired with a less capable child. A child will often respond to the singing of his own name when he will make no other response.

When a child's interest has been won, songs may be introduced which contain some tones which he has heretofore been unable to reproduce. Tones he can readily sing should remain the foundation of the tune, however. Either the home or the nursery school offers abundant opportunity for individual work with children who lack pitch consciousness. The task is made easier for little children are not yet self-conscious. Too much cannot be said about the importance of bringing pitch consciousness to each child while still a "pre-schooler", for never again will the opportunities for attaining this objective be as many or can it be accomplished as easily.

The devices and techniques for the training of little children to sing in tune are many. Ann Sterling Boesel in

her splendid book entitled "Sing and Sing Again" [40] lists the following:

1. "Pressing on the diaphragm to raise a tone when the child is singing.
2. "Telling him when a tone is not correct and showing whether it was too high or low by direction of your hand.
3. "Teaching him to think of the tones of the scale as steps.
4. "Repeating a tone several times when once it is sung successfully, and
5. "Starting with a tone he can sing and building on that."

This same author claims that a child should be taught to sing one tone successfully before he is asked to sing two, two tones before three, then three and then four, adding new tones as soon as he is ready for them. As soon as he has learned to sing six or eight tones in tune, he is ready to sing very simple songs. While training is going on, he should be hearing many songs and he should be allowed to "sing" them if he so desires.

Some teachers have found it more effective to concentrate on tones considerably higher than a child's favored range and then work downward to the desired tones rather than approaching from tones immediately below. In the training toward pitch consciousness, it should be remembered that tests have shown a child's spontaneous vocalisations to be considerably higher in pitch than his "music class" voice. Therefore, if the teacher can succeed in

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40. Boesel, Ann Sterling, Sing and Sing Again. New York, Oxford University Press, 1938.

bringing informal and spontaneous situations into music class, then she will have provided the environment most favorable for a conscious control of pitch. The fact that little children like repetition and find pleasure in singing the same musical pattern over and over enables a teacher to administer drill without risking monotony. There are many more techniques for the treatment of monotones including chanting, conversational singing and questions and answers and any teacher is able to invent additional techniques as the occasion requires, always remembering that interest must be maintained at all costs, for without it progress is impossible.

The more capable singers must not be neglected in the urgency of training those less capable. These singers will need a program which will challenge the full scope of their ability in both range and interval.

There are several methods of teaching rote songs, but experience has shown that pre-school children will learn a song more easily and accurately if they hear it several times before they try to sing it. The technique of alternately singing a phrase and having the children sing it back is not suitable for pre-school use. No more than two or three songs should be introduced in any one day. The singing, especially until the songs are learned, should be mostly unaccompanied. When the piano or other accompaniment is added, it should follow the melody line with a simple harmonic structure. The proper use of the piano

can mean much to the musical growth of the pre-school child but care must be taken that the harmonic structure does not "drown out" the melody we want the child to hear.

Finally, encouragement and interest on the part of the parent or teacher is the most valuable aid of method. Little children seem to need a sympathetic audience, and they will progress much faster in such an environment. The gains made by the less capable children should not be rewarded by elaborate praise, for it will tend to make them self-conscious. It is better to greet any success by tacit acceptance and to provide opportunities for further development.

SINGING

The content of a music training curriculum naturally arranges itself in four divisions: singing, rhythmic activities, creative expression and music appreciation.

Seashore points out that music and speech employ the same medium; namely, sounds which vary in pitch, intensity, duration and timbre. The speaking activities come first. Just as a child learns to talk by hearing others talk, so he learns to sing by hearing others sing. The quality of the speaking voice is highly important, for little children will imitate what they hear. It should be well-modulated and characterized by a clear enunciation. The singing voice, too, should be projected in the best manner possible, for again the children will imitate what they hear. The more perfect the original, the finer the imitation. From

early infancy it is important to surround a child with singing -- lullabies and other songs that are melodious and easy to listen to. He should also hear instrumental music, but this phase will be discussed in a later section.

As the child grows older, he will want to join in the singing, and he should, of course, be allowed to. His first attempts and for some time thereafter will likely be out-of-tune, but this really does not matter, for, at the pre-school level, interest as evidenced by participation is the important consideration. At times, he will burst out with tunes of his own creation and the alert mother will notice and sing them back to him. This will delight him and soon he and his mother will have a new game -- playing echo -- which will be great fun for both. The beginnings are simple and consist of only a few tones dealing with daily activities and experiences. Parents and teachers should watch for opportunities to enrich children's activities with singing. It is easy to invent songs to fit these occasions and this adds to the fun.

In the informal pre-school situation, many opportunities will present themselves for the use of tone matching devices which will lead a child into pitch consciousness, and as previously pointed out it is highly desirable that they be used before the child reaches the stage of self-consciousness. It is also important that they be used before children get in the habit of thinking they "can't sing."

We used to hear much talk about singing in a "high, clear voice." Since tests on range and placement have revealed that the pre-school voice is placed lower on the musical staff than was previously supposed, educators have not placed so much emphasis on this quality. They have come to realize that some children previously thought to be unable to carry a tune can do so when a song is transposed down to the range in which their natural voices lie.

Within the past five years, many song books containing excellent collections of original and folk songs and texts adapted to the tunes of the classics have been published and all contain a wealth of suggestions as to their use with pre-school children. A listing of these books with general comments as to content appears in the appendix and any one of them will be a dependable guide in the teaching of pre-school singing.

RHYTHMIC ACTIVITIES

Tests have shown that no significant improvement can be expected from training pre-school children to respond to a given rhythm but there is great value in providing many individual rhythmic experiences which the child will later be able to adapt to tempo and meter. This point of view raises some question as to the educational value of the rhythm band in the pre-school years. It is the belief of the writer that the toy instrument should be used for

individual training and that on occasion the children be allowed to play them together for the enjoyment of the activity, but that no attempt should be made to make the rhythm band a vehicle of rhythmic training or to bring the ensemble to any set standard of performance.

The wise parent or teacher will observe the rhythm of the child in any particular activity and will sometimes reinforce it with piano or other accompaniment. If a child accelerates his rhythm, the music must accelerate accordingly and if he slows his activity, the music must also be slowed. This will give the child the sense of correct rhythmic response as well as the pleasure of free rhythmic activity and is the very best way to start his rhythmic training. In time he will gain the muscular control that will enable him to adjust his response to the stimulus.

Little children are naturally rhythmical, and the mediums for rhythmic response are legion in the environment of the pre-school child. It will be natural for children to make large muscle responses before small muscle responses and physical well-being requires that such gross activities as running, jumping, skipping, marching, tumbling and the like be given prominent place in the curriculum. From about four years on, children enjoy having other children join them in these activities.

Singing games are an activity of childhood which combine singing with rhythmic activity. When activity involving large muscles is called for, it is better to have only

part of the group participate while the remainder carry on with the singing. In strenuous exercise, breath control is short and singing will either be omitted or will suffer in tone quality. The singing game is the first type of game a pre-school child is able to participate in and is an interesting form of play activity. Often a child who refuses to take part in any other music activity will join in the fun. The finger play games are fun, too, but their educational value for this age is somewhat limited since they involve fine muscular coördination.

In connection with rhythmic activity, the first rudiments of intensity can be taught — to clap loudly when the music says to do so and to clap softly when the music is soft. They also learn that the first beat of the measure is an accented beat and can so indicate by giving it a louder clap or by omitting the claps on the other beats of the measure.

The record companies all have especially prepared records for use in the rhythmic activities of children and lists of these are given in the appendix.

The toy instruments of both melodic and percussive types offer unlimited opportunity for rhythmic development. The children will sometimes enjoy making instruments and many musical lessons can be taught in the process. Children can soon learn the way to produce the most pleasing sound and will enjoy playing them in combination with others or with piano or victrola accompaniment. Some children will even learn the first principles of orchestration.

Too much emphasis cannot be put upon the development of the rhythmic sense, for all work is easier and less tiring when done rhythmically. The swing of rhythmic effort carries on of it's own impetus, to a great saving of human energy. Rhythmic sense is, therefore, one of the greatest of gifts.

CREATIVE EXPRESSION

Educational practices of a decade or so ago stressed the importance of conforming to a pattern and perfection of detail and execution. Modern philosophy has recognized individual differences and has determined that people are happier if their creative tendencies are encouraged and developed. These tendencies are possessed by everyone -- not just those with special talent or genius -- but they are the easiest to develop if the start is made at the pre-school level when children are not self-conscious about their creative efforts and are happy and satisfied with results an adult would deem entirely inadquate. In music, a child can be creative with his voice and with bodily activity or he can create instruments on which music is made.

Often he sings in a rhythmic chant to his play. The chanting stops when the acquisition of some new motor skill requires all his concentration, to be resumed when the skill is mastered. His chanting may be keeping time to his rhythmic activity or he may simply be describing what he is doing. Or it may be a repeated phrase suggested

by something going on around him, the words themselves having no meaning to him, but the rhythm they create appealing to the ear. Whatever form the expression takes, it marks the beginning of creative effort and should be recognized and encouraged as such. Eventually in addition to the rhythm, the child will discover the added interest of tone, or pitch. Again perhaps he imitates the sounds of others or the sounds he hears, but again it marks the beginnings of creative effort.

The guidance of creative effort requires consummate skill for a child will eventually reach a point where his skill in manipulating sound falls short of producing that which he wishes to express. It then becomes the teacher's delicate function to discover what he wishes and to aid him to express his idea without superimposing her idea on his. It has been said that the aim, insofar as creation is concerned, is that of giving the child opportunity to develop skills so that he may be free to progress rather than be balked by his own abilities.

This means that at times teachers should participate in creative activity -- sometimes following the child's lead entirely, sometimes helping him to see the next step ahead. Care must be constantly exercised not to overstimulate, but at the same time it must be remembered that children are constantly reaching out for new and satisfying experiences and if they do not have them, they will eventually become behavior problems. Will Earhart has

summarized the teacher's role in the guidance of creative effort [41] as follows:

> "Standards in creative activities must steer between encouragement of chaotic expression and the imitation of models. Creative work must avoid imitation of patterns, yet standards entail models, and these are always in danger of becoming patterns to be imitated. The most profoundly difficult problem for the teacher who guides creative effort is that of causing constant and intelligent improvement without making the children priggish imitators. On the one hand, she must not set patterns and teach rules; on the other hand, she dare not accept with joyful enthusiasm every outpouring, weak and unpremeditated or wholly unprogressive though it be, because it is "the child's very own'."

It follows that it is not necessary to take down the melodies a child creates as evidence of "budding genuis," although it is often nice to sing or play them back to him as a shared experience. Furthermore, it is a means of making a child aware of what he is doing or has done and is a part of the learning process. The preservation of a particular melody is not important, but the preservation and encouragement of the tendency and desire for creative effort is vitally important, and guidance must be directed toward that end.

The provision of opportunities through environment for creative expressions is the responsibility of parent and teacher. The stage of the child's physical development and perceptive ability will determine what constitutes

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41. Earhart, Will, Creative Activities, National Society for the Study of Education, Thirty-Fifty Yearbook, pp 123-137, 1936.

proper environment. It can be provided in almost endless variety with apparatus, toys, music, literature, pictures, people, activities and even space.

Satis Coleman in her work at Lincoln School, Columbia University, makes extensive use of toy instruments in encouraging creative expression. Her children not only use them to experiment with sound but also enjoy making the instruments themselves. Emma Dickson Sheehy, Horace Mann School, Columbia University, also uses toy instruments and stresses the importance of using only a few stimuli at a time and changing the number and size of the stimuli often. She feels that a child should be given every opportunity to try out instruments in his own way, barring destructive activities. When this is done, a child will soon become aware of the similarities and differences in sounds and will be able to repeat the sound he makes with a certain regularity, marking the creation of a rhythmic pattern. When he can consciously produce a pattern at will, learning has taken place. Self-expression and creative activity has also taken place.

Most educators feel that no set form or directions should be given, the words and melodies being allowed to flow from the child as he feels them. Creative experience coupled with the listening to music will tend to influence the child's creative efforts and gradually they will take on the elements of musical form and composition.

If creative effort is nurtured in the early years, the child will accept it as a natural activity, and in

later life this means of self-expression will perhaps provide the release which will make him psychologically well-adjusted as an adult. It will also give him a greater understanding and appreciation of all music.

MUSIC APPRECIATION

It is easy to develop in the pre-school child a liking for good music for all that is necessary is to supply the proper environment. In listening, a person absorbs according to his past experience and his present ability to absorb. With the pre-school child, this ability is small and, naturally, he has had no experience. For these reasons, the music he hears must be carefully selected so as to be interesting and of sufficient variety to hold his attention. It must be presented in amounts gauged to his span of attention. It should never be thrust upon him.

From psychology we learn that a child's traits and attitudes for his entire life are largely determined by the time he is six years old. Therefore, if musical experiences can be furnished during the pre-school years of a child's life, he will develop a permanent taste for good music. Before a young child can develop musical discrimination, he must have standards by which to judge that which he hears. The music he hears -- whether good or bad -- will supply him with these standards and it is, therefore, imperative that he hear the best. Someone has said, "Those who live with good music learn to like it."

Music should be presented at a time when the child is physically comfortable and happy. As Floy Rossman puts it, "The association of pleasant sounds with personal ease is necessary for first impressions, which are lasting." [42] If grown-ups listen to music with their children the additional pleasure of a shared experience will be present which will benefit both adult and child. There is no set time for listening activities, although in many homes the time just before bedtime is "listening time." In nursery schools and kindergartens, music for appreciation is often played during "rest time" and, of course, it is a regular part of "music time." As soon as children are able to manage the mechanics of a radio or record player, they can listen to music whenever they like.

The music of a child's environment will come through three principal channels: first, through vocal and instrumental music performed personally for him; second, through the radio; and third, through records. The vocal and instrumental music performed personally for the child contributes immeasurably to his music education. In the majority of instances, the music will lack professional musicianship, but the personal contact with the music when the child can actually see it being produced more than compensates for the lack in skill in producing it. Short works are the most suitable for a child's listening and

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42. Rossman, Floy Adele, Pre-School Music, New York, National Bureau for the Advancement of Music, 1940.

there are many from which to choose. The instruments a child will hear will depend, of course, upon the instruments those about him can play. Sometimes players can be invited in to share their talents. This is the ideal "concert" for the young child, for it is informal, personal and geared to his interest and attention span.

The radio can contribute much to the musical development of the child, but its usefulness has been blunted in many homes where it runs from morning to night, through good programs and bad, with no one paying any apparent attention to it. The proper way to utilize the radio for music appreciation is to select in advance a program of merit and then listen to it quietly and attentively. When some familiar selection is played, the children are always delighted and feel they have renewed acquaintance with an old friend.

The playing of records is the most satisfactory means of acquainting children with a great variety of musical selections, since the choice of numbers can be subject to the needs and desires of the listeners. A number of lists of records recommended for children have been compiled both by the record companies and in music books and a short list of suggestions is included in the appendix. Records of good quality are expensive to buy in the numbers one would like to own them, but it is sometimes possible to borrow them from libraries and this possibility should be investigated.

Sometimes music should be listened to without comment. Other times, "identification" measures can be played first and this will give the child something definite to listen for. If there is a story to the music, it can be told, leaving the musical impression entirely to the child. The children may be asked if the music heard was fast or slow, sad or gay and the like. Or they can be taught to recognize a particular instrument by its tone. Some children even sense the bare elements of form. The teacher should try to terminate the experiences of each child at the peak of his interest, rather than running the risk of endangering the child's future enthusiasm or jeopardizing the listener's interest by permitting any one member of the group to disturb others who are listening.

The better a child can understand music through previous participation, the keener will be his appreciation and the greater lift music can give him. Since so few carry active participation over into adulthood, it is all the more desirable that appreciation of music be developed early in life and the pre-school level is the place to start.

It has been necessary to discuss separately the various aspects of music education for the purpose of clarity, but actually there are no boundaries between them. Creativeness flows through every phase of music and listening is a part of every activity. As Beatrice Landeck advises,

"Let music weave itself into the fabric of the school day. Let its varied expressions find their own beginning and end." 43

OVERSTIMULATION AND EXPLOITATION

Specific problems met in the music training of pre-school children have been previously discussed, as well as the general problem of dealing with individual differences. Two other problems remain to be dealt with: overstimulation and exploitation. In the complexity of modern living the drains upon the emotional stability of all people are tremendous. We attempt to protect our children from these tensions, but they sense them and are indirectly affected. It, therefore, behooves us as music educators not to be so desirous of making progress and attaining objectives that we add to their tensions and overstimulate them. We must be painstaking to gauge their needs accurately and to supply as enriched a curriculum as their stage of readiness indicates but no more. Only in this way can we prevent overstimulation.

The second pitfall to guard against is that of exploitation. It is natural for parents and teachers to be proud of the accomplishments of their children and to want to show them off in performance, but the final result in no way compensates for the necessary drill and strain that are

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43. Mursell, Christianson, Landeck, Schwinn, Children and Music, Washington: Assn. for Childhood Education, 1948.

a part of such displays. Music educators are recognizing the lack of educational value in such exploitation and are substituting invitations to parents and interested friends to observe the daily routine of the class-room, where children feel free in their expression of music.

CONCLUSION

The first purpose of this study was to determine (1) whether or not the administration of music training at the pre-school level would advance children faster than the natural processes of growth and maturation, and (2) whether or not such training could be accomplished without coercion, drill or loss of interest. Some thirty scientific studies on the effects of training and various other aspects of musical response were reviewed and the findings are summarized as follows:

1. A wide range in fundamental capacity and results due to training were reported by the various experimenters. The latter was due in part to differences in procedure and scoring standards.

2. In singing, all studies showed that performance of all ages in tests of pitch, interval and phrase reproduction improved subsequent to training. Best response was secured when the stimulus was given by the human voice.

3. Descending intervals were sung slightly more readily than ascending intervals; narrow intervals (major and minor seconds and thirds) were more readily sung than the wider intervals.

4. Range of the pre-school voice was found to be somewhat narrower than had been previously supposed and placed several tones lower on the musical scale. Most experimenters gave optimum range and placement as to e' to c".

5. Improvement in increase in range is decidedly greater from two to six years than from six years to maturity.

6. Higher tones were sung more readily under spontaneous conditions. This is a clue to method in bringing pitch consciousness to young children. Intervals of the major and minor second and third were sung readily under spontaneous conditions.

7. Training in response to a rhythmic pattern did not substantially improve ability to keep exact time.

8. Children learn to keep accurate rhythms by first practicing them in their own time and then gradually learning to make them conform to a set stimulus.

9. Change of meter, simplication of music, sex or intelligence had little or no bearing on rhythmic response.

10. Negro children were much superior to white children in response to a simple rhythmic pattern of fast and slow speeds.

11. Best rhythmic response coincided with the fastest tempo used (186 beats per minute).

12. Increased ability resulting from training was accompanied by a gain in interest and a keen desire for further participation.

13. The pre-school level is the ideal age to bring pitch consciousness to children due to (a) the informal nature of the environment, (b) abundant opportunity for individual work, and (c) lack of self-consciousness on the part of the child.

14. Within the limits defined by scientific research, music training for pre-school children is a worthwhile and desirable activity.

15. The ideal setup for such training would be a "downward" extension of the educational system to the nursery school level. Until then, training will have to be given in the home, in pre-school music classes, or in private nursery schools.

16. Regardless of where the training is given, it will be more effective if the information revealed by scientific research is drawn upon in curriculum building.

When pre-school music training was found to be a worthwhile and desirable activity, a second purpose of this treatise was to suggest a curriculum of music training which

would be of maximum educational effectiveness. The findings of this phase of the study are summarized as follows:

1. Effective guidance requires a thorough understanding of the nature of the pre-school child including his vocabulary development and his need of music. The more methods of training are adapted to the individual needs and nature of young children, the larger are the potential abilities that are revealed and the larger are the gains achieved through training.

2. The first and foremost objective of pre-school music training is to have children learn to enjoy music as an integral part of the day's activities.

3. No attempt should be made to bring all children to the same musical standard. A child should develop from his own level and in his own capacity.

4. Participation should come through interest rather than through required attendance; the ideal approach is provided by the play situation.

5. Results are more easily achieved by working with the individual or with small groups. The flexible, informal situation is best.

6. The curriculum for the training of the pre-school child should include singing, rhythmic activities, creative expression and music appreciation.

7. Vocal or instrumental lessons of a formal nature at the pre-school level are ill-advised.

8. Due to the slow development of ability to keep time to a set stimulus, rhythm band activities should be de-emphasized.

9. Every possible means should be used to bring pitch consciousness to the child at the pre-school level when environment and the child's nature are most favorable.

10. Individual differences must be recognized and proper guidance given. Overstimulation and exploitation must be guarded against.

11. Every pre-school child is endowed with certain fundamental capacity. Proper guidance and training will enable him to make the fullest possible use of the talent with which he has been endowed.

BIBLIOGRAPHY

Alschuler, Rose, Two to Six, New York, Morrow, 1933.

Arlitt, A. H., Psychology of Infancy and Early Childhood, New York, McGraw-Hill, 1930.

Association For Childhood Education, Children and Music, 1943.

Association For Childhood Education, Knowing When Children Are Ready to Learn, 1947.

Association For Childhood Education, Music and the Young Child, 1936.

Baldwin, Lillian L., Listening, National Society for Study of Education, Thirty-Fifty Yearbook, Pt. II, pp 91-98.

Baldwin and Stecher, Psychology of the Pre-School Child, New York, D. Appleton-Century Co., 1927.

Barbour and Freeman, How To Teach Children To Know Music, New York, Smith and Durrell, 1942.

Bennett, Grace Irene, Songs and Rhythms for the Child in in the Home, Madison, Univ. of Wisc. Ex. Service, Circ. 250, Dec. 1931.

Better Homes and Gardens Child Care and Training Dept., Baby Book, Des Moines, Meredith Publ. Co., 1945.

Bevans, Gladys Huntington, Appreciation of Music Best Begun Early, News Syndicate Co., Inc., 1941.

Bevans, Gladys Huntington, You and Your Young Child, Chicago, The Chicago Tribune, 1941.

Brown, Rollo W., Why Creative Education Must Not Become A Fad, Childhood Education, VIII, June, 1931, pp 528-29.

Bucke, Lilian, Music in the Nursery School, Boston, B. F. Wood, 1929.

Champlin, Doris, (Editor), Music and the Child, New York, Child Study Assn. of America, 1930.

Child Study Committee, A Study of the Vocabulary of Children Before Entering the First Grade, Washington, International Kindergarten Union, 1923.

Child Welfare Research Station, Manuel of Nursery School Practice, Iowa City, Iowa University, 1934.

Christianson, Helen, Bodily Rhythmic Movements of Young Children in Relation to Rhythm in Music, New York, Teacher's College, Bureau of Publications, 1938.

Christianson, Helen, Music (In) The Pre School Child, His Development and His Guidance, Mills College Bulletin 1928, Series 18, No. 6, pp 119-124.

Cleveland, Elizabeth, Training the Toddler, Philadelphia, J. B. Lippincott, 1925.

Colby, Martha, Instrumental Reproduction of Melody by Pre-School Children, Ped. Sem. & Jour. of Gen. Psy., 47, 1935, pp 413-429.

Coleman, Satis N., Creative Music for Children, New York, Putnam, 1922.

Coleman, Satis N., Creative Music in the Home, New York, John Day Co., 1939.

Coleman, Satis N., Your Child's Music, New York, John Day Co., 1939.

Cunningham, Rose Ella, Pre-School Music, Lexington, Mass., Hadley Press, 1929.

Curwen, Mrs. J. Spencer, Psychology Applied to Music Teaching, London, J. Curwen & Sons, 1920.

Dewey, John, Art As Experience, New York, Minton, Balch Co., 1934.

Drexler, Ethel, A Study of the Development of the Ability to Carry a Melody at the Pre-School Level, Univ of Minnesota Master's Thesis, 1933.

Dykema, P. W., Significant Relationships of Music to Other Subjects, National Society for the Study of Education, Thirty-Fifth Yearbook, Pt. II, pp 23-35.

Earhart, Will, Creative Activities, National Society for the Study of Education, Thirty-Fifth Yearbook, Pt. II, pp 123-137.

Evans, Lucille, Spontaneous Songs of Little Children, Univ. of Nebraska Master's Thesis, 1934.

Faulkner, Anne Shaw, Music in the Home, Chicago, R. F. Seymour, 1917.

Fitchen, Margaret, Speech and Music Development of a One-Year-Old Child, Child Development 2, 1931, pp 324-6.

Flagg, Marion, Music in Early Childhood -- Ages Two to Six, Chicago, National Music Educators Conference.

Forest, Ilse, Preschool Education, New York, MacMillan, 1927.

Gates, A. I., The Nature and Limits of Improvement Due to Training, National Society for the Study of Education, Twenty-Seventh Yearbook, 1928, pp 441-461.

Gehrkens, Karl W., Is Four Too Young For Piano Lessons?, Etude 65:562, Oct. 1947.

Gernet, Sterling K., Musical Discrimination at Various Age and Grade Levels, College Place, Washington, The College Press, 1940.

Gesell, Arnold, The First Five Years of Life, New York, Harper & Bros., 1940.

Gesell, Arnold, Infancy and Human Growth, New York, MacMillan, 1928.

Gesell, Arnold, The Mental Growth of the PreSchool Child, New York, MacMillan, 1925, Also Edition Revised 1935.

Gesell, Arnold, The PreSchool Child, New York, Houghton Mifflin, 1923.

Gesell and Thompson, The Psychology of Early Growth, New York MacMillan, 1938.

Glenn and others, Music Teaching in Kindergarten and Primary Grades, Chicago, Ginn & Co., 1936.

Glenn, Mabelle, Rhythm, National Society for the Study of Education, Thirty-Fifty Yearbook, Pt. II, pp 51-58.

Glenn, Mabelle, Singing, National Society for the Study of Education, Thirty-Fifth Yearbook, Pt. II, pp 59-67.

Gordon, Edgar B., A Program of Music Activities Outside The School, National Society for the Study of Education, Thirty-Fifth-Yearbook, Pt. II, pp 187-194.

Graham and Wackerbarth, So Your Kids Aren't Stokowskis, Better Homes and Gardens, May 1947, pp 104.

Grandprey and Vance, Musical Capacities of Young Children. Jour. of H. E., 22, Dec. 1930, pp 937-939.

Hattwick, M. S., A Genetic Study of Differential Pitch Sensitivity, (In) Hattwick, M. S. and Williams, H. M., The Measurement of Musical Development II, University of Iowa Studies in Child Welfare, Vol. II, No. 2, 1935, pp 1-68.

Hattwick, M. S., The Role of Pitch Level and Pitch Range in the Singing of Preschool, First Grade and Second Grade Children, Child Development, 4, 1933, pp 281-291.

Heiliger, Louise, The Effect of Training upon the Musical Performance of Five-Year-Old Children, State University of Iowa Master's Thesis, 1935.

Heinlein, Christian Paul, A New Method of Studying the Rhythmic Responses of Children Together with an Evaluation of the Method of Simple Observation, Ped. Sem. & Jour. Genet. Psych., 36, 1929, pp 205-228.

Hissem, Irene, A New Approach to Music for Young Children, Child Development, 4, 1933, pp 303-317.

Howard, John Tasker, What Music for the Pre-School Child? McCalls, November, 1928, pp 35.

Hulson, Eva Leah, Tempo in Rhythm for Young Children, Childhood Education 6, 1929, pp 78-80.

Iowa University, Child Welfare Research Station, Manual of Nursery School Practice, 1934.

Jersild, Arthur T., Music, National Society for the Study of Education, Thirty-Eighth Yearbook, Pt. II, pp 135-152.

Jackson, Madelon W., Music Adventures with the Preschool Child, National Parent-Teacher, Oct. 1936.

Jersild and Bienstock, Development of Rhythm in Young Children, New York, Teacher's College, Columbia University, Child Development Monographs, No. 22, 1935.

Jersild and Bienstock, A Study of the Development of Children's Ability to Sing, Jour. Educ. Psych., 25, Oct. 1934, pp 481-503.

Jersild and Bienstock, The Influence of Training on the Three-Year-Old Children, Child Development 2, Dec. 1931, pp 272-291.

Jersild, Arthur T. and Others, Training and Growth in the Development of Children, New York, Teacher's College, Columbia University, Child Development Monographs, No. 10, 1932.

Johnson, Harriet M., Children in the Nursery School, New York, John Day Co., 1928.

Johnson, Harriet M., A Nursery School Experiment (Music Section by Carmen S. Reuben), New York, Bureau of Educational Experiments, 1922, No. 11.

Johnson, Harriet M., School Begins at Two, New York, Bureau of Educational Experiments, 1936.

Krevit, William, Music for Your Child, New York, Dodd, Mead & Co., 1946.

Kugelmass, I. Newton, Growing Superior Children, New York, D. Appleton-Century Co., 1946.

Kwalwasser, Jacob, The Composition of Musical Ability, National Society for the Study of Education, Thirty-Fifth Yearbook, Pt. II, pp 35-42.

Lafore, Gertrude Gilmore, Practices of Parents in Dealing With Pre-School Children, New York, Teacher's College, Columbia University, Child Development Monographs, No.31, 1945.

Langdon, Grace, A Study in Similarities and Differences in Teaching Nursery School, Kindergarten and First Grade, New York, The John Day Co., 1933.

Law, Helen P., Introducing a Child to Music, Parent's Magazine, Jan. 1937, p 31.

Learned, Janet, The Effect of Training Upon the Musical Performance of Three- and Four-Year-Old Children, State University of Iowa Master's Thesis, 1936.

Life, Child Development (A report on the work of Arnold Gesell), 22, Pt. 2, April 14, 1947, pp 97-105.

McConathy, Morgan, Mursell and others, New Music Horizons for Primary Grades -- Teacher's Manual, Chicago, Silver Burdett & Co., 1947.

McGinnis, E., Seashore's Measures of Musical Ability Applied to Children of Pre-School Age, Amer. Jour. Psy., 40, 1928, pp 620-623.

Marek, George, Guiding Your Child to Music, Pictorial Review Co., Inc., 1935.

Mathews, Ruth Vendley, You Need Music, Chicago, Neil A. Kjos, 1941.

Miessner, W. Otto, Music as an Integrated Experience, Music Educators National Conference, 1937 Yearbook, p 117.

Miessner, W. Otto, You Need Music, Milwaukee, Miessner Institute of Music, 1926.

Moran, Estelle, Never Too Young for Music, Parent's Magazine Maternity Service, Inc., 1947.

Morgan, Hazel Nohavec, Editor, Music Education Source Book, Chicago, Music Educators National Conference, 1947.

Mursell, James L., Give Your Child Music, Parent's Magazine, May, 1948, p 17.

Mursell, James L., Psychology of Music, New York, W. W. Norton & Co., 1937.

Mursell, Christianson, Landeck, Schwinn, Children and Music, Washington, Assn. for Childhood Education, 1948.

Mursell, James L. and Glenn, Mabelle, The Psychology of School Music Teaching, New York, Silver, Burdett & Co., 1931.

National Child Welfare Assn., Music and Childhood, New York, 1919.

National Education Assn., Organizing the Elementary School for Living and Learning, Assn. for Supervision and Curriculum Development, 1947 Yearbook.

National Recreation Assn., Singing and Playing in the Home, M. P.(#165-1-45).

National Society for the Study of Education, Pre-School and Parental Education, Twenty-Eighth Yearbook, Bloomington, Ill., Public School Publishing Co., 1929.

National Society for the Study of Education, Music Education, Thirty-Fifth Yearbook, Pt. II, Bloomington, Ill, Public School Publishing Co., 1937.

National Society for the Study of Education, Child Development and the Curriculum, (Includes chapter on Music), Thirty-Eighth Yearbook, Pt. I, Bloomington, Ill, Public School Publishing Co., 1939.

National Society for the Study of Education, Early Childhood Education, Forty-Sixth Yearbook, Pt. II, Bloomington, Ill., Public School Publishing Co., 1947.

Nelson, Amalie K., Guiding Behavior of Children, Columbus, Ohio State University, Agricultural Extension Service, Bulletin 184, 1943.

Ohio State University, How Children Develop, Columbus, Ohio State University Series, No. 3,1946.

O'Shea, Michael, The Child: His Nature and His Needs, Chicago, The Children's Foundation, 1924.

Parker and Temple, Unified Kindergarten and First Grade Teaching, New York, Ginn and Co., 1925.

Peery, Marian E. H., Music for the Pre-School Child, University of Idaho Master's Thesis, 1942.

Pennington, Jo., The Importance of Being Rhythmic, New York, G. P. Putman's Sons, 1925.

Pierce, Anne E., The Selection and Organization of Music Materials, National Society for the Study of Education, Thirty-Fifth Yearbook, Pt. II, Bloomington, Ill., Public School Publishing Co., pp 147-165.

Pitts, Lilla Belle, Music Education, Isolated or Integrated, Music Educators National Conference, 1937 Yearbook, p 115.

Ross, Margaret Wheeler, A Musical Message for Mothers, Chicago, Carl Fischer, Inc., 1926.

Rossman, Floy Adele, Pre-School Music, New York, National Bureau for the Advancement of Music, 1940.

de Rusette, Louie, Music Under Eight, New York, Dutton & Co., 1936.

Schelling, Ernest, Help Your Children to Make Music, Musical Courier, Dec. 1928.

Seashore, Carl E., Music Before Five, Iowa City, Univ. of Iowa Publication, New Series No. 1056, 1939. Child Welfare Pamphlet No. 72, Reprinted from the Parent's Magazine, 1939, 14, No. 3, 21, (March), pp 65-96.

Seashore, Carl E., On Their Musical Way, Iowa City, Univ. of Iowa Press, New Series No. 1217, 1941. Child Welfare Pamphlet No. 76, Reprinted from the National Parent-Teacher, June-July, 1940, 34, No. 10, pp 23-25.

Seashore, Carl E., Psychology of Musical Talent, Iowa City, Univ. of Iowa Press, 1919.

Seashore, Carl E., Psychology of Music, New York, McGraw-Hill, 1938.

Seashore, Carl E., Why We Love Music, Philadelphia, Oliver Ditson, 1941.

Seymour, Harriet, Home Music Lessons, New York, Carl Fischer, 1930.

Sheehy, Emma Dickson, Concerts for the Very Young, Parent's Magazine, April 1943, p 28.

Sheehy, Emma Dickson, There's Music in Children, New York, Henry Holt and Co., 1946.

Sheehy, Emma Dickson, There's Music in Every Child, Parent's Magazine, September 1946, p 26.

Sherbon, Florence Brown, The Child, New York, McGraw-Hill, 1934.

Simmonson, Doris, and others, Music for Children, New York Child Study Assn. of America, 1926.

Smith, Elizabeth Medorah, An Investigation of the Development of the Sentence and the Extent of Vocabulary in Young Children, Iowa City, Studies in Child Welfare, Vol. III, No. 5.

Spaeth, Sigmund, Music -- A Priceless Heritage, Fort Wayne, The Magnavox Co., 1945.

Spaeth, Sigmund, At Home With Music, New York, Doubleday, Doran, 1945.

Stern, William, Psychology of Infancy and Early Childhood, New York, Henry Holt, 1930.

Stewart, Maude, A Nursery School Experiment (Music Section), New York, Bureau of Educational Experiments, Bulletin #11, 1924.

Stinson, Ethelyn, How To Teach Children Music, New York, Harper & Bros., 1941.

Taylor, Deems, Of Men and Music, New York, Simon and Schuster, 1937.

Thomas, Edith, Music In The Home, Cincinnati, The Abingdon Press, 1920.

Thorn, Alice, Music in the Kindergarten, Music Educators National Conference, 1936 Yearbook, p 148.

Thorn, Alice G., Music for Young Children, New York, Scribners, 1929.

Updegraff, Ruth, A Syllabus in Nursery School Education, Iowa City, State Univ. of Iowa, New Series No. 814, 1935, Child Welfare Pamphlet No. 46.

Updegraff, Heiliger, Learned, The Effect of Training Upon the Singing Ability and Musical Interest of Three-, Four-, and Five-Year-Old Children, (In) R. Updegraff, et al, Studies in Pre-School Education, I, Iowa City, Univ. of Iowa Studies in Child Welfare, New Series No. 346, Vol. 14, Pt. III, pp 85-131, 1937.

Updegraff and others, Practice in Preschool Education, New York, McGraw-Hill, 1938.

U. S. Department of Commerce, Bureau of the Census, Characteristics By Age, U. S. Census (Sixteenth), 1940, Population Volume IV Pt. I, U. S. Summary, Table I, p 2, 1943.

U. S. Department of Commerce, Bureau of the Census, Statistical Abstract of the United States, Sixty-Eighth Edition, 1947.

U. S. Children's Bureau, Your Child From One to Six, Washington, Publ. 30, 1945.

Van Alstyne and Osbourne, Rhythmic Responses of Negro and White Children Two to Six, Washington, Soc. for Research in Child Development 2:4, Serial No. 11, 1937.

Vance and Grandprey, Objective Methods of Ranking Nursery School Children on Certain Aspects of Musical Capacity, Jour. Ed. Psy. 1931, 22, pp 577-585.

Wellman, Beth L., Education of the Pre-School Child, Iowa University, Child Welfare Pamphlet #5, 1932.

Whipple, Guy Montrose, Editor's Preface - Child Development and the Curriculum, National Society for the Study of Education, Thirty-Eighth Yearbook, Pt. II, p ix.

Williams, H. M., Musical Guidance of Young Children, Iowa City, Bulletin of the State University of Iowa, New Series No. 707, 1933, Child Welfare Pamphlet No. 29.

Williams, H. M., Immediate and Delayed Memory of Preschool Children for Pitch in Tonal Sequences (In) Hattwick and Williams, Measurement of Musical Development II, Iowa City, Univ. of Iowa Studies in Child Welfare, XI, No. 2, 1935, pp 85-94.

Williams, Sievers and Hattwick, The Measurement of Musical Development, Iowa City, Univ. of Iowa Studies in Child Welfare, 7, No. 1, 1932.

Wisenall, Eleanor Jane, A Study of the Music Activities of Children in the Kindergarten and First Grade, University of Cincinnati Master's Thesis, 1932.

APPENDIX 1

SONG AND RHYTHM BOOKS FOR PRE-SCHOOL CHILDREN

Armitage, Dykema, Pitcher, Rossman, Vandevere, Our First Music, Boston, Birchard & Co., 1941.

This is a comprehensive collection of twenty-four units dealing with every phase of musical activity. It is an excellent source book for pre-school use.

Armitage, Dykema, Pitcher, Our Songs, Boston, Birchard & Co., 1940.

The songs of this book will be a little advanced for most pre-school children to sing, but they will enjoy hearing the teacher sing them.

Bampton, Ruth, Come and Play, New York, Mills Music, Inc., 1948.

Fifteen pieces of descriptive music mostly about animals, to listen to or use for creative expression.

Bampton, Ruth, Singing for Fun, New York, Mills Music, Inc., 1947.

Forty-five songs with easy piano accompaniments about the seasons, nature, animals, insects and holidays for use for dramatizations, patriotic occasions, games and other activities. Notes are numbered. Tests are excellent although perhaps a little advanced for the pre-school child.

Beattie, Wolverton, Wilson, Hinga, The American Singer - Book One, New York, The American Book Co.

A good general text for kindergarten children.

Bentley and Matteweon, Music In Playtime, Chicago, Clayton F. Summy, 1948.

This is a splendid collection of rhythms, singing games and play materials for nursery schools, kindergartens and the home. Suggested rhythmic activities are included. Nicely illustrated.

Boesel, Ann Sterling, Sing and Sing Again, New York, Oxford University Press, 1938.

A fine book of fifty-seven songs many of them based on folk songs and classic melodies. Included are good tone

plays with stories for individual work with the beginning singer. Attractive colored illustrations.

Cable Company, The Everyday Song Book, Chicago, The Cable Co., 1927.

Part One of this book contains material (nursery rimes, game songs and others) suitable for pre-school use.

Carter, Jessie, Twenty Little Songs, Cincinnati, The Willis Music Co.

A good collection at a moderate cost.

Christie, Catherine, Days of Make-Believe, Chicago, Clayton F. Summy, 1935.

A book containing almost two hundred dramatic songs, games and rhythms for young children covering every phase of activity and interest. Easy piano accompaniments.

Coit and Bampton, Follow the Music, New York, Birchard & Co., 1948.

This is a collection of musical games and action songs, including new and original finger games that children are sure to enjoy. Suggestions for use are included. Illustrations facing nearly every page.

Coit and Bampton, It's Fun to Listen, New York, Harold Flammer, Inc., 1939.

This excellent book contains twelve adventures in music listening, with story suggestions. Mostly about animals.

Coit and Bampton, Tone Matching Tunes, New York, Harold Flammer, Inc., 1940.

This collection of tone matching tunes with suggestions for use should help a child to sing in tune at an early age. One index is arranged according to the size of interval to be matched. Songs are arranged so that the child imitates the singing of the teacher within the song.

Coleman and Thorn, Singing Time, New York, The John Day Co., 1929.

Forty short songs about the seasons, animals, birds, transportation and other childhood interests and experiences. Songs are mostly two to eight measures in length and have simple piano accompaniment.

Coleman and Thorn, The Little Singing Time, New York, The John Day Co., 1940.

A collection of twenty-two sentence songs nicely illustrated.

Costello, Louise, Sing and Sing Again, New York, Oxford University Press, 1938.

Crowninshield, Ethel, Stories That Sing, Boston, Boston Music Co., 1945.

Crowninshield, Ethel, Songs and Stories About Animals, Boston, Boston Music Co., 1947.

Crowinshield, Ethel, New Songs and Games, Boston, Boston Music Co., 1941.

Short songs with easy accompaniment that have good rhythm and action. No games are given but the words suggest games for the child to play, such as growing taller, running, ringing the bell, etc.

Diller and Page, A Pre-School Music Book, New York, G. Schirmer, Inc., 1936.

Contains a large collection of material for general use -- scale and group songs, quiet songs and games and music for rhythmic activities.

Gumpson, Helen, Step A Song, Buffalo, The Simcoe Publishing Co., 1930.

Twenty-two songs, four to eight measures in length, with simple accompaniment.

Dykema, Peter (Editor), Twice 55 Games With Music, Boston Birchard and Co., 1924.

This collection of games with music and directions is worth far more than its small price.

Gaskill, Clarence, Sing Play and Color Book, New York, Mills Music Inc., 1943.

A small collection of original tunes in novelty arrangement at a small cost.

Glenn, Leavitt-Rebmann, Sing A Song, Chicago, Ginn and Co.

This book is for the teacher's use in presenting vocal music in the kindergarten. It contains one hundred twenty-two short, simple rote songs of varied mood and interest.

Glenn, Leavitt-Rehmann, Play A Tune, Chicago, Ginn and Co.

This book presents one hundred fifty folk melodies and excerpts from compositions of great composers, in simplified form. The child first listens and then interprets the rhythms freely by some form of bodily activity or dramatization.

Hofer, Mari Ruef, Music for the Child World, Chicago, Clayton F. Summy.

A collection of piano music in three volumes. Contains characteristic scenes and sketches, rhythms, marches, games and a musical story and picture book.

Hunt, Evelyn, Music Time, New York, The Viking Press, 1947.

Forty-five American and international songs for small children in both major and minor keys. One is in the pentatonic scale. Simple accompaniments. Also suggestions for games.

Hyde, Herbert E., Rhythms for Kindergarten, Chicago, Clayton F. Summy Co.

Eighteen short pieces for piano, with suggestive titles representing fundamental rhythms.

Kenagy and Arnold, Musical Experiences of Little Children, Cincinnati, Willis Music Co., 1932.

This collection contains songs and rhythms for various occasions and also descriptive sketches for the piano.

Lindsay and Jaffe, Songs of Cultures Kiddie's Delight, New York, Mills Music, Inc.

MacCartney, Laura Pendleton, Songs for the Nursery School, Cincinnati, Willis Music Co., 1937.

An excellent all-around book containing activities for two-year-olds, tone games, finger plays and a few suggestions as to the method of presenting.

McConathy, Morgan, Mursell, Bartholomew, Bray, Miessner, Burge, New Music Horizons, Book I, Chicago, Silver Burdett, 1944.

Twenty two appealing short songs beautifully illustrated in color.

McConathy, Morgan, Mursell, Bartholomew, Bray, Miessner, Burge, New Music Horizons, Book II, Chicago, Silver Burdett, 1944.

The songs of this book will be too advanced for pre-school children to master but they will enjoy hearing the teacher sing them.

Martin, Burnett, Rime, Rhythm and Song, Chicago, Hall and McCreary, 1942.

Martin and White, Songs Children Sing, Chicago, Hall and McCreary, 1943.

Miessner and Beattie, Melodies to Play and Sing, First Book, Chicago, Hall and McCreary, 1935.

Myers, Folk Songs of the Four Seasons, New Work, G. Schirmer, 1929.

Oltz, Carle, Rhythm Time, Chicago, Clayton F. Summy Co.,1946.

Twenty-one original pieces to be used for rhythmic activities and development.

Perham, Beatrice, Jerry and Janet on the Farm, Chicago, Neil A. Kjos Music Co., 1937.

A story illustrated with short songs, some folk and some classic melodies. An excellent book for the children to look at as they sing. Later they will be able to play the notes, which are numbered.

Potter, Edna, This Way and That, New York, Carl Fischer (Oxford University Press).

A book of singing games with directions for each game given with its song. Colorful illustrations.

Radcliffe and Whitehead, Folk Songs and Other Songs for Children, Boston, Oliver Ditson Co.

Traditional and folk songs from all countries with a piano part of medium difficulty.

Rossman, Floy, Pre-School Music, Boston, C. C. Birchard and Co.,1939.

Rossman, Floy, Singing All The Way, New York, Paul-Pioneer Music Corp., 1931.

Scatter, Minnie, Wallace, Romp in Rhythm, Cincinnati, Willis Music Co., 1944.

This book contains a number of simple rhythms for children to interpret and stories to suggest interpretation. Book is nicely illustrated.

Silver Burdett Company, The Music Hour in the Kindergarten and First Grade, Chicago, Silver Burdett Co.

A collection of almost five hundred songs and instrumental selections for every type of music activity. Works of the best of the classical and modern composers and poets are represented.

Upshur, Claire Harsha, Circus Day: The Garden Gate, New York, Harold Flammer Publishing Co., 1948.

Vandevere, J. Lilian, The Instructor Rhythm Band Book, Dansville, N. Y., F. A. Owen Publishing Co.

Votaw, Laederach, Mainheimer, Rhythm Band Series - Teacher's Manual, Chicago, The Raymond Hoffman Co.

Van Loon, Hendrik Willem, The Songs We Sing, New York, Simon and Schuster.

Nursery rhymes and their traditional tunes with easy but very fine piano accompaniment. Each song is faced by a full-page illustration in color.

Wadley and Allison, Discovering Music, Boston, The Boston Music Co.

This book contains a wealth of musical activities for the pre-school child.

Warner, Lorraine, A Kindergarten Book of Folk Songs, Boston, E. C. Shirmer, 1923.

A collection of seventy-seven songs of Mother Goose, the seasons, geography and songs of festival. Also contains lullabies, dialogues, games and street calls.

Waterman, Elizabeth, A B C of Rhythmic Training, Chicago, Clayton F. Summy Co., 1927.

Contains complete lesson plans for teaching rhythmic response to music.

Waterman, Elizabeth, The Rhythm Book, New York, A. S. Barnes and Co., 1936.

The first half of the book contains methods for teaching rhythm and the second half provides music suitable for walking, running, jumping, hopping and ten other types of rhythmic activities.

Wiechard, Angela Cramsie, The Little Singer's Song Book, C. C. Birchard and Co., 1931.

Very good songs for the young, with an easy piano part. Not illustrated.

APPENDIX 2

SOURCES OF RHYTHM BAND EQUIPMENT AND SUPPLIES

Gretsch Manufacturing Co., The Fred, 218 South Wabash Avenue, Chicago 4, Illinois.

Ludwig and Ludwig (Division of C. G. Conn Ltd.), Elkhart, Indiana.

Lyons Band Instrument Co., 223 West Lake Street, Chicago, 6, Illinois.

National Recreation Association, 315 Fourth Avenue, New York 10, New York.

Zansig, Augustus D., Starting and Developing a Rhythm Band. Reprinted 1948 - $0.35.

Peripole Products, 2937 Avenue R, Brooklyn 29, New York.

Walberg and Auge, 31 Mercantile Street, Worcester, Massachusetts.

APPENDIX 3

LIST OF PHONOGRAPH RECORDS

The various companies offer a wealth of records from the child's own world. Many selections have been recorded a number of times, for different companies by different artists. It is, therefore, wise to listen to several recordings before making a purchase. Unbreakable records are now available and are a good investment. Often a record may be used for several purposes. A child's library of records should contain as wide a range of selections as possible in order to have available the type record needed to enrich an activity or to provide a well-rounded course in music appreciation.

The following records are suggested for such a library:

RHYTHMIC AND MARCHING RECORDS

Basic Rhythmic Activities -- Victor Album E-71
Grand March (Aida) -- Verdi
Harmonious Blacksmith -- Handel
March of the Dwarfs -- Greig
Stars and Stripes Forever -- Sousa
Washington Post March -- Sousa
El Capitan -- Sousa
Praeludium -- Jarnefelt
Amaryllis -- Ghys
March of the Little Lead Soldiers -- Pierne
March Minature -- Tschaikowsky
Rakoczy March -- Berlioz
Turkish March -- Beethoven
March Militaire -- Schubert
Grand March (Tannhauser) -- Wagner
Funeral March of a Marionette -- Gounod
Arkansas Traveler
Pop Goes The Weasel
Soldier's March -- Schumann
March -- Hollaender

CLASSICS

Basic Listening Activities -- Victor Album E-77
Children's Prayer (Hansel and Gretel) -- Humperdinck
Cradle Song -- Brahms
Ave Maria -- Schubert
Tales from the Vienna Woods -- Strauss
Blue Danube Waltz -- Strauss
Largo (New World) -- Liszt
To A Water Lilly -- MacDowell
To A Wild Rose -- MacDowell
Narcissus -- Ethelbert Nevin
Berceuse (Joselyn) -- Godard
Carnival of the Animals -- Saint Saëns
Danse Macabre -- Saint Saëns
Nutcracker Suite -- Tschaikowsky
Peer Gynt Suite -- Greig
The Happy Farmer -- Schumann
Traumerei -- Schumann
Clair De Lune -- Debussy
Flight of the Bumble Bee -- Rimsky-Korsakov
Moment Musicale -- Schubert
The Skater's Waltz -- Waldtenfel
Waltzing Doll (Poupee Valsante) -- Poldini
Scherzo (Midsummer Night's Dream) -- Mendelssohn
Toy Symphony -- Haydn
The Old Refrain -- Mallullath
Hungarian Rhapsody -- Liszt
Barcarolle (Tales of Hoffman) -- Offenbach
La Golondrina (The Swallow) -- Mexican
All Through The Night -- Welsh
Peter and the Wolf (Opus 67)-- Prokofiev
William Tell Overture -- Rossini
In a Clock Store -- Orth
On The Trail -- Groffe
The Hurdy-Gurdy -- Carpenter

RECORDS FOR SPECIAL OCCASIONS AND OTHER RECORDS

Basic Singing Activities -- Victor Album E-83
Singing Games -- Victor Album E-83
Nursery Songs
Hymns and Carols
Patriotic Songs
Allegro Junior Records -- aj 1 to aj 8
The City Sings for Michael -- North
Tubby, The Tuba - Tripp and Kleinsinger
Little Indian Drum -- North
Songs For The Nursery School -- MacCarteney

NOTE: The Young People's Record Club, 295 Madison Avenue, New York, New York offers a Subscription Series of ten unbreakable records a year for pre-school children.