A five month experimental study on the therapeutic use of music with mentally deficient children

Sara Mae Peterson

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A FIVE MONTH EXPERIMENTAL STUDY
ON THE THERAPEUTIC USE OF MUSIC
WITH MENTALLY DEFICIENT CHILDREN

A Thesis
Presented to
The Faculty of the Conservatory of Music
College of the Pacific

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts

by
Sara Mae Peterson
June 1959
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A special thank you should be given to Mrs. Harbert for her guidance, patience, and understanding during the study, during the preparation of this thesis, and throughout the two years of academic work at the College of the Pacific. She has been more than a counsellor and professors; she has been an inspiration and a friend.
I For the common things of everyday
God gave man speech, in the common way,
For the deeper things men think and feel
He gave the poets things to reveal.
For heights and depths no words can reach
He gave music - the soul's own speech.

II Why do we make music? Indeed, we may say with Carlyle
that if we search deep enough there is music every-
where. But Why? Neither I nor anyone else has
been able to solve that problem.
How then do I justify music? There is no need to justify
it; it is its own justification; that is all I know
and all I need to know.

Ralph Vaughan-Williams.

III Music is the spirit's blood of life,
Music can open doors of memory,
Can find us fairer worlds than we remember,
Until the earth is sweet, the heart is free.
Music can close doors, too, ..... quietly heal
The sights unsought, letting the darkness fall
On what the mercy of the night can seal
Beyond the earthless and the windless wall
of silence. And music shall be there
When we hear voices we have longed to hear,
And love and laughter thrill across the air,
And life comes back to us, and friends are near.

Allen E. Woodall.

IV All one's life is Music if one touched the notes rightly
and in tune.

Ruskin.

V A man should stir himself with poetry, stand firm in
ritual, and complete himself in music.

Confucius.
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IV. Group growth through musical experience as evidenced by comparison of observed responses at the beginning and the end of the study...

V. Growth through musical experience as evidenced by comparison of individuals as observed at the beginning and the end of the study......
Ways to train and to aid the mentally deficient child to reach his maximum potential are now important problems that must be answered, for this atypical child is finding an increased acceptance into this world of the normal. The belief that all children should have guided and creative musical experience and that the mentally deficient child should be considered as a child first initiated this study. This thesis is a report of the work of the investigator and of the observations and findings which developed out of the project.

I. THE PROBLEM

Statement of the purposes. The purposes of this study are two-fold: (1) to investigate the use of music as a tool toward learning and for teaching desirable behavioral patterns, and (2) to tabulate the musical elements and activities which formed the core of this study.

Hypothesis. Music is a medium that establishes communication, stimulates learning responses, and influences behavioral changes in mentally deficient children.

Null Hypothesis. There is no significance difference in the measures obtained when comparing the first and the
last datum.

**Importance of the study.** To this writer's knowledge there have been no similar studies conducted in the area of the severely mentally deficient child. Other known studies have dealt only with the use of music within state schools and institutions for the mentally deficient and at different age levels.¹

Research into the use of music as a therapeutic medium is needed. This study will add pertinent information and practical techniques to the research which might be conducted by music therapists working in many fields.

Of practical importance is the understanding of the value of the nursery and music experience as a preparation for special education classes in the public schools.

**Limitations and problems of the study.** The study was planned to cover a period of six months, but, as it turned out, it was developed in only five. However, as children of this type are very slow to respond and need continuity and repetition to establish a rapport with the teacher or therapist, a five or six month study is not of adequate length for the type of research knowledge which is needed in the whole field of study.

As there was no measuring device available, such a device had to be created.  

Sample. Nine children of severe mental disability were the sample with which this work was carried out. These children lived in their own homes and came together five mornings a week for this common nursery school experience. The age range was five to ten years, but over half of the group were age six. The mental age range (as determined by psychological testings) was twenty-one to fifty-three with four of the group having an undetermined I.Q. Four races were represented within the group, and the socio-economic conditions ranged from very low to average middle class with two-thirds of the group in the very low class. These children were selected from the families which applied for this nursery experience; moreover, no family which applied was denied this opportunity.

Type of study. This study was of an experimental design, comparing pretreatment and posttreatment data.

Collection of data. For the purpose of this study, data was derived from rating scales. These scales were developed to facilitate work with this particular group of children by measuring the individuals and group ac-

\[2\text{See Chapter IV.}\]
according to established criteria. It was also a means of evaluating the techniques employed.

II. SOME DEFINITIONS OF TERMS USED

Mental Deficiency. This is the legal conception of mental deficiency which was adopted by the Mental Deficiency Act of 1927.

Mental defectiveness means a condition of arrested or incomplete development of mind existing before the age of eighteen years, whether arising from inherent causes or induced by disease or injury.3

Mind. According to Webster, mind is the total of the conscious states of an individual; one's capacity for mental activity; the perceptive and thinking part of consciousness, exclusive of will and emotion. Tredgold states that there are two chief views on the meaning of the word mind. One view contends that mind is an independent spiritual something which entirely transcends matter, although making use of the matter of the brain for its manifestations. The other holds that mind has no such independence, but that it is merely a transient product of brain activity.4

Amentia. This is the term given to the mentally

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4Ibid., p. 8.
deficient which means "without mind." Amentia must also be classified into two divisions: etiology and degree.

Etiology has three divisions: (1) Genetic, in which the defect is genetically determined, such as microcephalus, gargoylism, and Lawrence-Moon-Biedl syndrome; (2) Simple, in which no cause can be found; and (3) Secondary, in which the defect is due to some adverse factor or to the lack of some favorable factor in the environment. This classification can be further divided according to the nature of the external factor: deprivative, such as Mongolism and cretinism; traumatic, such as Rhesus incompatibility and epileptic; and infective, such as syphilitic and hydrocephalic.5

By degree we mean the three terms most common to the layman in speaking of mental deficiency; idiocy, imbecility, and moron.

Idiocy. This is defined in the Mental Deficiency Act of 1927: "Persons in whose case there exists mental defectiveness of such a degree that they are unable to guard themselves against common physical dangers."6 This type has the most severe loss, and the I.Q. is considered less than twenty-five. The mental age is not more than

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5 Ibid., pp. 36-37
6 Ibid., p. 39
thirty-five months.

Imbecility. This is defined in the Mental Deficiency Act of 1927:

Persons in whose case there exists mental defectiveness, which, though not amounting to idiocy, is yet so pronounced that they are incapable of managing themselves or their affairs, or, in the case of children, of being taught to do so.7

The I.Q. is between twenty-five and forty-nine, and in America the mental age is considered between thirty-six and eighty-three months.

Moron. This is defined in the Mental Deficiency Act of 1927:

Persons in whose case there exists mental defectiveness which, though not amounting to imbecility, is yet so pronounced that they require care, supervision, and control for their protection or for the protection of others, or, in the case of children, involves disability of mind of such a nature and extent as to make them... incapable of receiving education at school.8

The I.Q. is between fifty and seventy-four, and the American definition has the mental age between eighty-four and one hundred forty-three months.

Iso principle. This is a term used by music therapists to mean "matching the need."9 An emotional mood

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7Ibid., p. 41.
8 Ibid., p. 42
is matched with a musical mood when working with patients, (manic or depressive, for example) and from this initial mood the therapist tries through music to change this to a more desirable or receptive mood.

**Melody.** According to Mursell, a melodic experience is a sequence of tones which constitutes a melody when it is apprehended in terms of a unified and single response. (1) Melody to the young child is a total contour of tonal movement. (2) Melody always may be, and in its essence always is, entirely independent of harmony. (3) Melody need have no definite unified tonal structure. 10

According to Webster, melody is a succession of single tones, having the relationship of a given mode or key and of a rhythmical structure.

**Rhythm.** According to Mursell, in a rhythmic experience (1) certain stimuli in a presented series shall be apprehended as accented, (2) rhythm requires some regularity of recurrence in the accented elements and in their resultant groupings, and (3) while rhythmic organization differs markedly from tonal organization, it is an error to think that our impression of rhythm is uninfluenced by perceptual content. 11 The element of rhythm comes from the accentua-

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10 Ibid., pp. 100-101.

11 Ibid., pp. 149-151.
tion and duration of the stimuli and from the pauses between them, and the rhythmic structure of music has a genuine independence from its tonal structure. According to Webster, rhythm is regularity or flow of movement which groups by recurrent heavy and light accent.

III. ORGANIZATION OF THE THESIS

The remainder of this thesis is organized into four sections. Chapter II deals with the historical views, and the dynamics of music therapy. In Chapter III there will be presented a description of this nursery school project as to the program, musical testing, materials, and techniques employed. Chapter IV contains the individual and group records from the daily observations made and also includes sample rating scales. In Chapter V will be found the findings and interpretations of this study and the summary of the project.
CHAPTER II

DYNAMICS OF MUSIC THERAPY

I. HISTORICAL VIEWS OF MUSIC THERAPY

The term music therapy is a relatively new one in our vocabulary, but the function itself is found in classical antiquity. The Roman and Greek cultures held music in the highest regard, and its role is found in all phases of their life—religious, ethical, social, political, educational, and medicinal. Plato, the famous Greek philosopher, thought that music was a prime factor in transformation, for music is the medicine of the soul. When the soul has lost its harmony, melody and rhythm assist in restoring it to order and concord. He also felt that the souls of children should be charmed by melody and that music should be used as an ennobling educational instrument promoting self-control.¹

The function of music, thought Aristotle, pupil of Plato, is threefold: it is a source of recreation and pleasure, it is suited to intellectual use of leisure, and it is a powerful ethical force in molding character. Music seems able to produce observable effects on the moral

character of the soul and if this is so it is clear that
the young should be motivated toward music and must be
educated in it. All the harmonies should not be employed
in the same way, but the most ethical type should be used
for education, and the active and exciting kinds for lis-
tening to the performance of others. Any experience that
brings a violent reaction in some souls exists in all,
but the degrees of intensity vary. He is speaking of
emotional catharsis.

Aristotle also felt that music is an important fac-
tor in achieving intellectual virtue, the ultimate end
of education. Music in its melodies and rhythms contains
images of anger and gentleness, or courage and temper-
ance and of all their opposites. When one learns to feel
an emotion, like pain or pleasure, with reference to the
musical image, one approximates the experience which he
would have towards the reality.

Cassiodorus, contemporary of Aristotle, wrote on the
spiritual benefit of musical training. He held that it
is operative in every act of life, both physically and

\[2\text{Ibid.}, \ p. \ 58-59\text{.} \]
\[3\text{Ibid.}, \ pp. \ 58\text{.} \]
\[4\text{Ibid.}, \ p. \ 59\text{.} \]
morally. Our speech is regulated by musical rhythms, and similarly our pulse; and this in turn, through harmonious symmetry, is associated with our character.  

Another whose ideas were closely associated with those of Plato and Aristotle was Aristides Quintilianus, an authority on music around 300 A.D. He felt that the soul had been endowed with a dual nature, rational and irrational, so that there should be two educational processes: philosophy to guide the first—reason; and music to guide the second—sensual desire. In regard to music he felt that music shapes and fashions man's moral ideas through harmonious experiences and renders the body more harmonious through rhythm. Since in the early period of life, the rational soul still lies dormant and the irrational soul is really susceptible to a system of training, nature herself has provided music to instill the proper ends through the medium of precept and example. Thus he felt that children are ever ready to express themselves in music.

Aggrippe, a musician of the Renaissance, in discussion of the types of music, felt that song has more power than the sound of instruments. Harmony moves passions,

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5Ibid., p. 68.
6Ibid., pp. 76-77.
but harmony must emanate from sources that are in concord, be they pipes, strings, or voice, but human voices have more power because they originate from the same species.\(^7\) Variance of musical type and mode of expression was in belief, but certain musicians, as Aggrippe, were trying to delve a little deeper into the power of music.

The functional use of music has evolved from personal beliefs without scientific sanction through a period of limited study and observation into the growing scientific research of today.

There is a deficiency of pertinent historical literature which would be of help in understanding why the mentally deficient were for so many centuries considered mentally ill, and were often hidden from society and forgotten.

In an endeavor to make this historical review pertinent to the study, the investigator has presented a brief background of the use of music as a therapeutic agent. It is necessary, after having reviewed the historical background, to consider the modern views of music therapy.

\(^7\text{Ibid.}, \text{p. 132.}\)
II. MODERN VIEWS OF MUSIC THERAPY

In order to understand the therapeutic use of music for the mentally deficient, one must become acquainted with the dynamics of music therapy. Music therapy is a new field of therapeutic endeavor, and, although the initial work was concerned primarily with methods and their results, the recent interest is in the dynamics involved. Dr. Rudolf Dreikurs, psychiatrist and educator who is deeply interested in the field of music therapy, had the following to say in an article entitled "The Dynamics of Music Therapy":

The therapeutic effect of music can probably be explained by first, the effect that music has on emotions in general, i.e., on the individual, and second, its effect on interpersonal relationships. We possess considerable information about the physiological and emotional changes produced by music. However, talk about a mysterious "x" factor still persists. There seems to be something magic in the effects of music, or at least the materialistic analysis of physiological responses to music seems to be unsatisfactory to many as an explanation of its deep emotional appeal. This vague dissatisfaction with, and suspicion of, many forms of analysis seem to have some justification. However, they will not be allayed by involved psychological "explanations"; what is lacking in many research studies is an holistic approach to an understanding of the effect of music.8

Dr. Dreikurs then states several factors which he

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believes are inherent in music. First, music is communication; it is language. There is a line of communication from one person to another and from the composer to the performer, and the performer to the listener. The unique importance of this factor is that it is nonverbal communication. Dr. Dreikurs goes on to say:

It is probably this nonverbal communication, inherent in music, which not only explains its emotional significance, but its influence on interpersonal relationships... Wherever verbal communication has ceased, music can still establish communication... Communication through music does not provoke defence mechanisms... Music links and does not divide.9

In working with mentally deficient children one is most conscious of the factor of this area of communication, for many children do not talk or find it very difficult to be understood. It has been found that music increases verbalization, and this was one of the criteria in this study.

Second, in relation to the above, the qualities inherent in music make it an ideal medium for social integration. Dr. Dreikurs continues:

Music eliminates individual distinctions; it levels off inequalities in status. It has an equalizing effect on all those in its spell... Music expressing and stimulating emotions, links one with the other, integrates each with the group. In this

9Tbid., pp. 18-19.
sense, music overcomes antagonism, isolation, non-participation. The strongest effect of music therapy is consequently achieved in group settings.10

Thus, the reader can see that group music activities can be of benefit to the shy, withdrawn, and insecure child who greatly needs a therapeutic group experience.

Third, music implies order. This order is expressed through the rhythm inherent in music, and this is an exceedingly important factor for therapy. Dr. Dreikurs feels that the therapeutic effect of melody and harmony seems to be secondary to the effect of rhythm. Everyone needs to know and to feel order within himself. In a speech which he presented in 1956, Dr. Dreikurs stated:

It is order which our patients have to learn, and there are no other, or very few other, experiences which can induce a patient to a regularity of order as well as rhythm which is order in itself. We know that the order, the rhythm of music, can affect the inner rhythm of the individual. For instance, the heartbeat can become faster or slower following the rhythm of music. If the inner rhythm of man can be affected through the rhythm of music which he hears and to which he is exposed, then we realize that we have here a most efficient instrument of orderliness. This rhythm is particularly important for children in a rhythm band. They may have never done anything to keep in step with others; they were always out of step with parent, with sisters or brothers, with children in school, something in consonance, together with the others ... togetherness in the order of the pedic, of the beat, of the rhythm. One cannot emphasize enough the therapeutic importance and significance of rhythm which

10Ibid., p. 19.
am sure therapy will discover more and more as experiments will be conducted and observations will be available.\textsuperscript{11}

Additional factors of the importance and use of rhythm will be given later in this chapter.

In relation to factors two and three, Dr. Dreikurs states the following:

The social character of music makes its effects most obvious if it is used as a group medium. Listening together is more than responding to the communication of the music. The listener becomes a part of the group of people who all participate in the same experience. It requires a minimum of active participation and, therefore, is within reach of even very withdrawn patients . . . If such results are possible through mere passive participation, it is obvious that active participation must have even stronger therapeutic effects. It requires a greater degree of social interest, a feeling of belonging, a willingness to co-operate with others. Even a rather primitive activity in a rhythm band indicates the patient's willingness and ability to take part in the group. Such participation express[es] his growing feeling of belonging and in turn intensifies it. The demands of the group are perceived without rebellion, facilitating a reorientation of a patient toward the meaning of social living, a process essential for all therapeutic endeavors. Rhythm and harmony are acceptable symbols of order, in contrast to its other requirements which still may be rejected. The individual who keeps time gives up his isolated rebellion and antagonism toward others. He stops being against them. He experiences the satisfaction of contributing, of doing instead of getting, of being a part of the team, of the enjoyment of teamwork. All these experiences counteract the basic mechanisms of neurosis, psychosis, and character disorders.\textsuperscript{12}

\textsuperscript{11}Rudolf Dreikurs, "The Psychodynamics of Music Therapy," (paper read at a music therapy conference, 1956).

The fourth important factor is that music stimulates creativity and spontaneity. It is the ability to be spontaneous that makes us free-free from compulsion, rigidity, and inhibition. The more spontaneous we become, the healthier, the more co-operative, the more contributive we are. The creative approach is also another avenue of communication, and one which this investigator believes is most important for inward growth, both for the normal and the exceptional child. A child cannot grow by mere imitation of adults or other children. This important inner growth develops from self-initiative to external stimuli, such as music, and this means of educational learning—for both mental and physical growth, has a place in our educational curriculum.

The investigator has briefly presented four factors—communication, social integration, order, and creativity—which are inherent in music and compose the dynamics of music therapy. It is felt that the reader would gain more understanding if the two elements of music with which this study is most concerned, melody and rhythm, were discussed in a little more detail. According to James Mursell, the prime musical elements are rhythm, pitch, and intensity, which he calls objective elements, and melody and harmony, which he calls subjective elements.¹³

The elements of melody and rhythm were selected by the investigator for the study of observable criteria. These two elements are especially adaptable to the study of mentally deficient children, and, for this reason, they were chosen.

Leading into the discussion of these two musical elements will be a brief study of the meaning of music. The investigator believes that music does have meaning which is essential to a therapeutic musical experience. Let us first take a general definition of the word meaning. According to Morris R. Cohen, "Anything acquires meaning if it is connected with, or indicates, or refers to, something beyond itself, so that its full nature points to and is revealed in that connection." Meaning is, thus, not a property of things and cannot be located in the stimulus alone. Therefore, it would seem pointless to ask the intrinsic meaning of tone or of a series of tones. They are meaningful only as they point to, indicate, or imply something beyond themselves. Here enters relationship, which leads to the assumption that meaning is not in either the stimulus alone, that to which it points, or in the observer. Cohen and Mead have stated that it rises out of a "triadic" relationship between

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(1) stimulus, (2) that to which the stimulus points, and (3) the conscious observer. This gives rise to the feeling of expectation and embodies musical meaning which is, in short, a product of expectation. Unconsciously our mind is organizing and expecting. Meyer has established two types of expectation: (1) those that rise from the nature of the human mental processes, and (2) those that are based upon learning in the broadest sense of the term.

In the actual perception of music there is an intimate and subtle interaction between both. Meyer feels that thought and memory are the foundation for expectation, for without them there could be no musical experience. However, we must keep in mind that the traces left in memory by experience are constantly changing, and, consequently, we are continually altering our expectations. Repetition, though it may exist physically, never exists psychologically. It seems to be a cycle: changes lead to expectation, and expectation itself is always changing. Musical meaning, therefore,

\begin{align*}
15 & \text{Ibid., p. 34.} \\
16 & \text{Ibid., p. 35.} \\
17 & \text{Ibid.,} \\
18 & \text{Ibid., p. 43.} \\
19 & \text{Ibid., p. 87.}
\end{align*}
differs with the individual, and, in relation, the emotional experience also.

Music is an emotional experience and, for this reason, is of therapeutic value. What is emotion? Meyer states:

Emotion or affect is aroused when a tendency to respond is arrested or inhibited. In other words, the energy of the organism activating an instinct process must be blocked by repression before the poignant feeling is excited.²⁰

Moreover, this tendency may not be inhibited by an opposed tendency but by the fact that it cannot reach completion. The music therapist looks for emotional responses, but these may be very difficult to ascertain, for not all emotional responses will result in overt, observable behavior. Moreover, even when overt behavior is present, its interpretation is difficult unless we have accurate knowledge of the stimulus situation beforehand. However, the purpose of emotionally differing behavior is communication, and communication is a prime factor in the dynamics of music therapy.

Communication may be tonal or rhythmical. A person may be observed (for example) swaying, tapping, humming, or generally relaxing to musical stimuli. Beginning with the tonal element, the investigator has found that lower

²⁰Ibid., p. 47.
and richer tones such as those of a cello are more pleasing and appealing to the younger child than the higher tones of a violin. Thus, pleasing tones may provoke the emotional response of increased attention and interest. Children always tend to respond to melody as a living totality, not as a structure built out of notes.  

Musical responsiveness to tone itself is sensory, emotional, and perceptual. A mood is created, the listener experiences association and imagery, and visual responsiveness develops. There is a connection between the auditory and visual centers of the central nervous system, and this connection seems to produce the tendency to look toward sound. Sound becomes better articulated and structured when the action of both ears is equal. To see what one hears tends to enable one to hear it better and to increase attentiveness; consequently, the therapeutic value of "live" music is more penetrating and seemingly more lasting than that solely on record or tape. Children love to watch the keys of the piano as it is being played, or the bow as it crosses the strings of the cello. However, phonograph music plays a large part in many therapeutic experiences, and its value is not to be denied. What this investigator want to

21Ibid., p. 14.

22Mursell, op. cit., p. 41.
stress in connection with this musical medium is the importance of the placement of the phonograph for the listening experience. The "live" performer would be centrally located in front of a group; thus, the phonograph should be placed accordingly. The investigator has too often observed a listening experience for children with the music coming from a phonograph remote from the group. The children should be brought to the phonograph. Particularly in the work with the mentally deficient, it is desirable that the relationship between the music and the child be a close one.

Tones are the most subjective of all highly organized sensations. There are cases of tone arousing color sensation and even sensations of taste and smell. Tones impose certain fixed relationships which are not the outcome of training but seem to arise from the very condition of perception and overflow into other sensations. Mursell has divided attitudes toward tone into the following four types: (1) objective, which includes pitch and quality; (2) intra-subjective, which includes sensory and emotional experience; (3) character, whether it is happy or sad; and (4) associative, which includes meanings and drama.23

23Ibid., p. 38.
Emotional potency of tone is also manifest in physiological changes. Mursell says:

We find that tonal stimuli regularly produce in the organism physiological changes precisely similar to those that take place during emotion; thus, connection between emotional states and physiological changes cannot be doubted.\textsuperscript{24}

A few of the physiological changes caused by tonal stimuli are a marked effect on pulse, respiration, and external blood pressure (this was because of the fundamental tonal content and not the type of music); a delay in the onset of muscular fatigue and, under certain conditions, an increase in the efficiency of mental work; a marked effect upon the psychogalvanic reflex which was a direct effect on tone; and a lowering of the thresholds of sensitivity to other forms of stimulation.\textsuperscript{25} This element in music is one which cannot be ignored or overlooked in establishing or in evaluating a therapeutic music experience.

Tonal and rhythmic elements function very intimately together and affect one another in many ways; however, it is felt that one piece of music is primarily rhythmic while another has tonal predominance. Mursell states that "rhythm is in some real measure independent of the

\textsuperscript{24}\textit{Ibid.,} p. 218.

\textsuperscript{25}\textit{Ibid.,} p. 27.
sensory medium in which it is conveyed....A fairly regular although very flexible scheme of accentuation is always present in a genuine rhythmic experience....What we must have in order to have rhythm at all is some definite set of expectation."

There are various theories expressed on this element of rhythm: (1) the motor theory, which says that the experience of rhythm is the feeling of one's own ordered and sequential voluntary muscular activity; (2) the mental activity, which says that the foundation of rhythm is not in the motor activity; and (3) the element of rhythm which comes from the accentuation and duration of the stimuli and from the pauses between them. Mursell regards kineasthetic memory, the ability to retain a muscular set long enough to repeat it, as the foundation of perception and productivity of rhythm. He goes on to say:

The undeveloped mentality of the infant or the impaired mentality of the mentally retarded child would serve as example of such a belief. In neither case would one elicit the rhythmic response which anyone can observe if this were possible only through the voluntary mental process. These motor reactions, as they are most often called, are immediately incited by sound impressions, are free of conscious control, and are involuntary in type. The younger the child

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26 Ibid.

27 Ibid., p. 151.
is, the clearer will he show a perfect motor reaction to sensory stimuli. 28

To explain rhythm, Meyer has broken it down into a process of three perceptions: (1) perception of pulse, which involves an objective or subjective division of time into regular recurring, equally accented beats; (2) perception of meter, which involves an awareness of the regular recurrence of accented and unaccented beats; and (3) perception of rhythm itself, which involves a mental grouping of one or more unaccented beats in relation to an accented beat. 29

These theories have led to the belief that rhythmic perception involves activity of both mind and body. Jacques-Dalcroze, the great exponent of eurhythmics, stated as his philosophy:

Musical sensations of a rhythmic nature call for muscular and nervous response of the whole organism, and the lack of musical rhythm is the result of a general 'a-rhythm'; the cure is to harmonize the mind and the body. 30

He believes that the awareness, study, and analysis of rhythms inward and outward of the body are vital to the health and growth, mentally and physically, of every child.

28 Ibid., pp. 160-163.

29 Meyer, op. cit., p. 102.

Two types of memory can be developed through the perception of rhythms: muscular and sound memory. The muscular system perceives rhythms, and by means of repeated daily exercises, muscular memory may be acquired, promoting a clear and regular representation of rhythm. Also, the ear perceives rhythms, and by means of repeated daily exercises, the sound memory may be acquired, sharpening and stimulating the critical faculties. Jacques-Dalcroze states:

The object of rhythmic training is to regulate the natural rhythms of the body and, by their automatization, to create definite rhythmic images in the brain. There is an immediate connection between the instinctive movements of our body, the continuity of which forms and assures rhythm, and the processes of our psychic life....The child should learn to feel music, to absorb it, to give his body and soul to it; to listen to it not merely with his ear but with his whole being. Aural sensations require to be completed by muscular sensations....The aim of earhythms is to enable pupils to say, not 'I know,' but 'I have experienced,' and so to create in them the desire to express themselves.31

Another believer in rhythmic movement for children is Gladys Andrews, who wrote:

The desire for expression through movement is especially strong in the child, to whom large, free movements are natural outlets for thinking, and feeling. The inherent need of the child to move, to express himself through movement demands the thoughtful attention and understanding of those concerned with elementary education.32

31Ibid., pp. 119, 316.

She continues:

Children cannot be thought of as a number of separate entities. From the time he is born the child has a body, mind, and emotions which are interrelated and interactive. Anything happening to one part effects the whole. 33

This statement, believes this investigator, embodies the importance of a therapeutic approach and of music as a therapeutic tool.

Through the medium of creative rhythmic movement a child can develop his concepts of time, space, largeness, smallness, height, and depth. Also, in the early stages or in the very young child, rhythmic movement will provide the opportunity for self-regulation. These movements serve as a framework for the development of expression and understanding, and such a program will also provide the socialization which is necessary to every child. This is an important medium of self-expression. Andrews continues:

Every child needs constant opportunities for seeking and developing self-expression, and creative rhythmic movement is an enriching and regarding opportunity toward this goal....There is no one classification of movement or sequence for presenting and developing, nor can movement be developed in isolation without recognition of the elements of space and rhythm. As movement is developed it is also affected by experience, thoughts, feelings and ideas which children continually have...Rhythmic experiences fulfill two fundamental and urgent needs of the child--

33 [Ibid.], p. 2.
to move and to express. His instrument is his body, and the many parts of this instrument are learned through exploring and thinking. Gradually the child will gain control over all the various parts and will come to realize that here is an instrument of expression which can help him to communicate his ideas and thoughts....Rhythm and movement are inseparable; when we see and feel ourselves moving we are also perceiving rhythm. We are rhythmical beings surrounded by rhythm. 34

Not only through creative rhythmic movement but also in the experience of a rhythm band can a child discover another medium of self-expression. During this experience the child has not only the opportunity to feel the rhythm in his whole body as he plays or marches but also the opportunity to discover the variety of instruments which he can use to make sound. Through this type of musical experience he will develop socialization, a feeling of belonging and participating equally with others, orderliness, and provide an outlet for emotional release. Here is also the opportunity to exercise control over uncoordinated muscular energies, as the child plays in the group or stands up to lead.

This investigator has briefly discussed the musical elements of melody and rhythm and a few of the beliefs and ideas for their importance as dynamics in music therapy. Consequently, the power of tonal elements to insti-
gate physiological and psychological changes, as a medium of communication, and as a medium of emotional responsiveness has been presented to initiate further thought and learning. The kinaesthetic memory, orderliness and self-regulation, self-expression, healthy and growing bodies and minds, and social awareness can develop through the power of rhythm. Communication and emotional release are also important factors in a rhythmic experience. This investigator believes that the relationship between these two musical elements and the dynamics of music therapy which were presented earlier in this chapter is a justification for the use of music as a therapeutic tool with exceptional children and particularly the mentally deficient.
CHAPTER III

THE NURSERY SCHOOL PROJECT

I. SITUATION AND BACKGROUND

Nine children attending the Stockton Nursery for Mentally Retarded Children were the sample group for this study. This nursery was organized in 1954 by parents who wanted additional help in training this type of child. The investigator came into the school in the spring of 1957.

Two primary changes had been made when this study began: the nursery school had a new location which was more adequate in space and facilities than the previous building, and a new teacher had been hired.

Administrators and teachers were primarily interested in the experiment. Other persons became interested through observation of the work.

II. PROGRAM

At the initiation of this study, the teacher and the investigator thought it would be best to leave the structure of the program unchanged and to add gradually the music activities not already included. The music experiences familiar to the children were rhythm band, a limited number of circle games, record playing by the children, and rest time with music in the background. However, the music sel-
ected for this latter experience was not of the type to produce the desired relaxation.

After several weeks the total program was altered to center around the music experience and to present these in an order which would be most beneficial to the group. This schedule remained unchanged until approximately the halfway point of the experiment when the sequence was again altered for purposes of the study. It should also be mentioned that slight changes were made during the two testing periods conducted by the investigator and, in addition, a listening program was inserted during the last month. A well-structured schedule was maintained in order that the group might begin to feel an orderliness through repetition and might gain a feeling of security; however, the program also had to be flexible in order for there to be creative growth and development in the children.

The total nursery school program. This program included variety of learning experiences from the simplest activities to the more complicated ones which were adaptable only to the more able children. There were special training activities such as drawing, coloring, pasting and blowing bubbles; there was playtime which included training experiences in manipulation of buttons and zippers and wooden puzzles; there were outside activities which included swinging, playing ball, and outdoor games; there was also a
snack time followed by a rest period. One of the most important activities of the total program was the learning experience which included listening to stories and learning the names of objects in books and pictures and saying these names.

The music program. The first activity of the morning was forming the children into a circle and securing active responses through singing, aurhythmics, creative expression, and musical circle games. The rhythm band experience, which came later in the morning, included the use of drums, rhythm sticks, and a mixed variety of instruments. Music was employed as background for quiet time, for the training activities, and, on several occasions, for snack time. The singing experience evoked bodily and vocal responses, while the listening experience was both stimulating and relaxing and consisted of opportunities to hear live music in addition to phonograph records.

III. MUSICAL TESTING

Each child experienced two musical testing situations: one was given during the second month of the study, and the other test was given during the last two weeks. Three of the group, however, varied from the norm: two children had three tests, and one child had only one. Each testing situation was exactly the same as to arrange-
ment and types of instruments, general atmosphere, place in the sequence of the morning's activities, and technique used by the investigator. In addition, both the tests were given in alphabetical order, according to the name of the child, thus allowing both testing sequences to follow the same pattern. One test was given each day until each child had been tested. The second testing at the close of the study was given in order to help the investigator evaluate the therapeutic musical experience for each child.

The investigator adopted the form of this test from a test which is given to children at the College of the Pacific Music Therapy Clinic. However, certain changes were made in the criteria found in the clinic test. In addition, the rating scale was entirely changed by this investigator; the rating scales for this musical testing and for the study observations are the same. See Chapter IV for explanation of scale.

Because of the fact that this test with the changes made by the investigator had not been given previously to mentally deficient children, both the reliability and the validity are unknown.

The musical instruments employed in these testing periods were the following: autoharp, xylophone, bells,
shakers of several different types and colors, large and small drums with rubber and drum head tops, tambourines, large and small cymbals, gourds, triangles, rhythm sticks, tonettes, flutaphones, and piano. There were two of each type of instrument in order that the tester would also have an instrument available for use if she felt it desirable for the situation.

These testing instruments were both familiar and unfamiliar, although the majority were the ones which were available to the children during the daily rhythm band experience. The four unfamiliar ones were the autoharp (soft stringed tones), the tonette, the flutaphone (both producing tone through blowing), and the melody bells. Because of the difference in shape and color between tonettes and flutaphones, this worker selected both for the testing situations. It was desired to learn if these two factors would influence a child's preference since both instruments are played in similar manner.

Each test was given in a room separate from the one in which the children were playing together. This provided a quiet atmosphere without distraction from the other. The investigator brought each child into the room in which all the musical instruments were placed near the piano for physical accessibility. The investigator allowed complete freedom of choice and exploration to each child for two
reasons: to learn which instruments were selected and were most pleasing to the child, particularly because at the first testing no child had had a previous experience with the four unfamiliar instruments mentioned above; and to endeavor to make the testing situation fun and relaxing through self-initiative selection and exploration. After several minutes, if the child were hyper-active, the investigator would then begin to bring the child into an orderly experience through (1) slow steady rhythmic beat, (2) use of the iso principle, or matching the mood of the child and gradually slowing down and softening the music, (3) use of one of the unfamiliar instruments in order to capture interest and attention, or (4) playing a song or piece most liked by the particular child. However, if the child were extremely passive and had done none or very little exploring, the investigator would then try to stimulate interest or response through the playing of different instruments and of familiar songs or melodies.

The length of a test varied from fifteen to thirty minutes; this variance was due to the mood, interest and responsiveness of the child. The average length of time was between twenty and twenty-five minutes.
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IV. MATERIALS AND TECHNIQUES

Our rhythm band inventory included two large rubber top drums, four small rubber top drums, three bucket drums with regular drum heads, two tin drums, thirteen pairs of rhythm sticks (the number became less due to chewing or fading of colors), eight pairs of cymbals, five tambourines (three made and two purchased), twelve varieties of shakers, four triangles, three clappers, six gourds, one toy xylophone, and two knockers. The majority of these instruments were brought to the nursery by the investigator at the beginning of the study and were from the College of the Pacific Music Therapy Department. Additional ones were donated by women volunteer workers; one woman had her Cub Scout den make tambourines.

The phonograph available to us at the beginning of this project was a very poor one, and eventually this important musical device had to be eliminated from the program until a new phonograph was presented to the nursery during the last month of the study.

The records which were used for the listening experience were almost entirely from the College of the Pacific Music Therapy Department and will be found listed under Appendix II.

An autoharp and a cello were also included in the
musical equipment, and details of their function in the program will be stated later in this chapter.

The investigator also used pictures in conjunction with the circle and singing experiences. These were visual aids to facilitate comprehension of animals or objects about which they were singing or which they were imitating.

The techniques in working with these children were essentially of an experimental nature, for the investigator had never worked with this type of child prior to this study. Better acquaintance with the group and each child individually, made it much easier to plan the activities and the approach to them.

The circle is an excellent medium to bring children together and one which was used extensively. It includes everyone, and each child can feel that he is part of the group. No child is ahead or behind; each has his place, as a member of the group and as a participant in the activity. In the circle, also, each child can easily see the others and be stimulated to movement by watching and imitating. The element of control is also to be found through the medium of the circle. It was found to be a most successful way to begin the morning's program, for each child came from his own home and was excited upon arrival at the nursery school. Consequently, the circle activity was an important socializing factor and also initiated a semblance of orderliness.
As all joined hands in the circle, they began to sing their opening circle song called "Here We Go Walking Round and Round." The last line is "Won't you tell us what's your name when the music stops?", and at this line the circle would stop and the child to whom the teacher pointed would say his name. As an opening activity, the investigator found it to be fun and stimulating to speech. It also appeared to give a feeling of success when a child finally succeeded in telling the group his name.

Following the song the group then participated in free rhythmic movements while the investigator played at the piano. This included such movements as swinging arms, shaking legs, going up and down, jumping, bending, walking on tip-toe, or stepping heavily. Following several of these body movements in the circle, the children then took a partner and had the opportunity of a one-to-one relationship as in two's they would swing, rock, or see-saw to the music. Back into the circle again, they changed from boys and girls into "animals", such as deer, elephants, ducks, frogs, or bears. Animals move in different fashion and at different speeds; consequently, this activity gave the children a varied rhythmic and body experience, and they greatly loved it.

The last part of the opening circle activities was
the circle games, such as "Looby Loo," "Here We Go Round the Mulberry Bush," "Farmer in the Dell," and "Sally Goes Round the Moon." These games and the others used in this study will be found in Appendix II.

The circle idea was also applied to listening, singing, and rhythm band. The chairs were placed in a half-circle arrangement around the piano or the phonograph; this facilitated the children's seeing each other and also the investigator's observations of the children.

Another activity which employed the circle idea and was also a favorite with these children was Musical Chairs. The chairs were kept stationary; none were removed after the children marched around them. The rhythmic element in music seemed to be the dominant one here, but the element of melody should not be overlooked, for the children had to listen to the song in order to know when to begin and when to stop. However, this investigator believes that it was the strong rhythmic impulse which motivated and sustained movement. Both the piano and the drum were used as the rhythmic pulse for this game, and the more successful of the two was the piano; the children were more accustomed to bearing this medium, and the investigator felt that a familiar melody—possible on the piano but not on a drum—also added to the enjoyment of the experience.

As one of the criteria for this group was social aware-
ness, the investigator emphasized the circle as a medium for this goal. However, two other techniques were tried. One of these was the one-to-one relationship which was employed in connection with the circle relationship, and the other was the conga line. This latter was attempted in order to bring the children together in a different way and to learn the value of such an approach. The song, which was the basis for this activity, was "One elephant went out to play upon a spider's web one day. He had such fun he called upon another elephant to come." The children did not join hands but placed their arms around the waist of the child in front. When first introduced and demonstrated, this action was not grasped by the group; however, after about one week of demonstration there was increased readiness to join the group. Mention need only be made of the elephant line, and several of the children would join together. Although the music for this activity did not change, the movement was changed to a step-step-step and hop-hop-hop pattern. The teacher, volunteer workers, and the investigator would sing this pattern, and although not all stepped and hopped, there was much evidence of enjoyment.

Another technique that was important in work of this type was repetition. The orderly structured program was repeated daily but with occasional variation. Each song,
record, and musical activity was repeated many times with the gradual introduction of new ones. An attempt was made to add a new circle game at least every two weeks and sometimes once every week. When the new game was introduced, it was played at least twice on the first day in the opening and closing circles. Each day thereafter for a week, it was presented in order that the children could absorb the actions and tune. As their repertoire grew, this continual repetition of a game was an aid to future responses.

The rhythm band experience also included several types of marching formations. The one primarily used was the circle or attempt at a circle. It was a difficult and slow process to have a single line formation, and it was only during the last month that success was achieved in having a single column that looked like one. Some of the children did leave the group, but there were several occasions on which the investigator was very pleased to the order that the group maintained throughout the marching. The hyper-active ones were held by a worker. An important factor, the investigator believes, in the success of the single marching column during the last month, seemed to be the change in procedure. Instead of each child immediately leaving the circle when the march began as had been done previously, one child was now designated as the leader,
and the children followed this child out of the circle. He would then lead the children back to their chairs, and the investigator noticed an increase in group orderliness through the procedure of marching back to one's own chair and then sitting down.

Not only the single column but the double column was attempted, but marching with a partner proved unsatisfactory; one child would always seem to walk faster than the other, and a single column would then result.

Another marching technique which was tried was a single marching line with the children shoulder to shoulder. The group marched to the opposite end of the room from their chairs and then turned around and returned to their chairs. This formation was not understood the first time that it was done, but each time there was slight improvement; moreover, several times the group stayed together. It was felt that this was a real accomplishment. The children marked time before the actual marching began, and this also provided the investigator with an excellent observation of rhythmic responses.

The rhythm band experience was divided into three parts; drums, rhythm sticks, and a variety of instruments. The investigator chose this division for two reasons: (1) it gave each child the opportunity of an experience on each type of instrument, and (2) it provided the investigator with the opportunity to observe the responses and rhythmic release of each child on a drum, with rhythm sticks, and
with a tambourine, cymbal, triangle, or bells. The music played for each of these three experiences was selected for the particular type of instrument and was not repeated in another section. The music also varied in rhythmic pattern (three and four rhythms), in accent (light and heavy beats), and in tempo (slow, moderate and fast). Also included in the rhythm repertoire were songs such as "Pop Goes the Weasel," "Hickory Dickory Dock," and "La Chiapanacas" in which the group had to listen and to strongly accent a certain beat or to play only at a designated place in the piece. Moreover, to allow the children to feel the impact of the rhythmic beat with the entire hand, and not to duplicate the rhythm stick experience, the drum experience was totally performed with the hands.

In the last month of the study a change was made during the rhythm band: the three rhythmic experiences became one. Thus all instruments were available to the children throughout the band activity. This change was made in order for the investigator to learn instrument preferences not already known and to discover if any association had been developed between the music and a type of instrument.

Another group experience which was incorporated into the rhythm band activity on the last two days of this project was a tonette-flutophone band. This experience was solely for fun; the investigator made no attempt to teach fingering,
but did try to help some to blow. The blowing experience delighted the children, and several were even able to blow a tone.

There was an attempt to teach these children rules. A child did not receive an instrument unless he was seated in his chair, and also, each child did not play his instrument until all had one and the investigator began to play a song on the piano. The most common command was "Wait for the music!" It was desired to establish the feeling of a group band, not individual players, and it was also a method to eliminate the noise and to provide orderliness.

Not only are rhythmic experiences important for the mentally deficient child but also the listening experience. In this study the listening experience was of two kinds, recorded and live music, which was performed by outside musicians and by the investigator. The two primary aims of this experience were (1) to stimulate speech, learning, and body responses, and (2) to induce relaxation. Recorded music was used for both purposes and the selections consisted of children's records and classical instrumental works. The classical records were used for quiet time or for background music. When live music was used, it was furnished by the piano, the cello, or the autoharp, all as media toward relaxation.

The children enjoyed the record activity, and as
would be expected, some records were more popular than others. The list of these records is found in Appendix III, but the investigator would like to name two of the most popular records: "The Little White Duck" and "Train to the Zoo." Both records dealt with animals, a most popular subject with these children.

The piano was constantly used as an instrument of accompaniment, but it was also explored as background to training time and to quiet time. The children were interested the first time that the investigator played it as a solo instrument, for this was something different to them. Then it ceased to be a novelty, and the investigator found it to be very adequate for the intended purpose.

The autoharp was an accompaniment to the investigator's voice which was used as an instrument; the investigator did not sing words, but used vowel sounds or hummed. The children were seated around a table with the investigator seated at one end. The children placed their heads on the table and listened to the music.

The use of the cello with this group was stimulated by a visit to Stockton by Juliette Alvin, a cellist from England. Although she is a professional musician, she also uses her cello as a therapeutic medium to teach mentally retarded children in London. After seeing a demonstration and talking with her, the investigator felt that the children
should have the opportunity of meeting her and listening to her music. A visit was made to the school and because of the interest and enjoyment shown by the children in the cello, the investigator and a student cellist from the College of the Pacific performed regularly for the group. The experience was short and consisted of showing the instrument, the bow and strings, and then playing several short pieces. The pieces selected were primarily melodic, for the cello has a warm rich tone, but lively or improvised numbers about animals were also played. Following the pieces, each child had the opportunity to come to the cello, to hold the bow, and to draw the bow across the strings.

Singing activity followed the listening experience, and the children moved the whole body or parts of the body in response to the songs. The subjects for singing were many and varied, and a list will be found in Appendix. The most popular songs seemed to be the ones which stimulated the most body response: stamping of feet, jumping, or movement of the arms. The songs varied according to tempo and amount of action; consequently, a song with a great deal of arm or foot action would be followed by one of a more quiet nature or with less vigorous movement.

This singing experience had a five-fold plan: (1) to provide fun, (2) to stimulate body responses, (3) to promote relaxation of body parts, (4) to stimulate speech
or sound, and (5) to facilitate learning. As there were both passive and hyper-active children in this group, there was a definite need for both activating and relaxing songs. There were two types of activity songs, and examples of these were "She'll be Coming Round the Mountain," which required full body movement and "Put Your Finger in the Air," which allowed the child to sit quietly as he moved his fingers. In addition, this latter song also was found to be a stimulation to speech in the naming and the learning of the parts of the body as the finger touched them.

To further stimulate speech, the investigator chose songs about animals and the sounds which they make or about objects which were both familiar and unfamiliar to the children. The buzzer on the bus, the toot of the train, or the "ma-ma" of a baby are examples of such subjects. Singing songs on the vowels or with "la" or "lo" was attempted also.

The songs selected were chosen from books, familiar melodies set with original words, or original songs both in melody and verse. The investigator found it necessary to compose little songs for this study because there is such a limited number of adequate ones for this severely deficient child of young age. Believing that familiarity leads to learning, the investigator selected several circle game tunes to which to write new words. Two examples are
"The More We get Together" and "Here We Go Round the Mulberry Bush." Thus there was a carryover from the circle activity to the singing experience. Another approach was to take a favorite song and adapt its melody to a useful learning situation.

In this chapter the investigator has presented the project, the situation, the techniques used in the group experience and the materials which were a part of the activity and testing program. The music materials and activities were of a simple nature and varied according to the degree of activity or passivity. Variety was an integral part of each activity, although the total program was one of orderly sequence.

In Chapter IV the observations made and the results obtained from the use of the above materials and techniques will be presented.
CHAPTER IV

GROUP AND INDIVIDUAL RECORDS FROM DAILY OBSERVATION

I. GROUP RECORDS

This experiment utilized the observable responses and development of the group as a whole as well as of the individual child. For this reason fifteen group criteria were established:

1. Social awareness and interpersonal relationships.
2. Discipline and orderliness.
4. Group interest and participation.
5. Attention span.
6. Retentive ability.
7. Stimulation to speech or verbalization.
10. Stimulation to initiative.
11. Physical stimulation.
12. Physical relaxation.
13. Security and acceptance.
15. Minimization of cultural differences.

Each of these criteria will be discussed after the presentation of an illustrative graph, (Table II). Moreover, before the discussion of the fifteen criteria, the scale ratings and gradings found on the graphs, representing observations, will be explained.

II. EXPLANATIONS OF RATING SCALE I

SOCIAL AWARENESS:

1. Group as a whole enters into the group activities.
TABLE II
GROUP MONTHLY ANALYSIS

1. Social Awareness and Interpersonal Relationships.
2. Discipline and Orderliness.
4. Group Participation.
5. Attention Span.
6. Retentive Ability.
7. Stimulation to Speech or Verbalization.
10. Stimulation to Initiative.
11. Physical Stimulation.
15. Minimization of Cultural or Racial Differences.
2. Group as a whole forms a circle by taking hands.
3. Group stays together.
4. Group learns to share.
5. Group watches a child leader.
6. Group becomes more helpful of each other and of the teacher.
7. Group becomes more responsive to strangers.

**DISCIPLINE AND ORDERLINESS:**
1. Group learns to wait for instruction or for music to begin.
2. Group learns to accept limits and rules.
3. Group learns to march together in a line and to stay in their places when standing or sitting.

**MUSICAL AWARENESS:**
1. Group starts and stops an activity with the music.
2. Group becomes more aware of changes in the musical tempo.
3. Group becomes more aware of changes in musical dynamics.
4. Group is aware of music while engaged in a non-music activity.

**GROUP PARTICIPATION:**
1. Group appears to function as a group, not as individuals.
2. Group becomes more responsive in the activities.
3. Group helps prepare for activity, e.g., placing their own chair in the circle.
4. Group becomes more willing to accept leadership, e.g., leading the rhythm band.
5. Group participation seen in musical activities carries over into the non-musical activities.

**ATTENTION SPAN:**
1. Group shows an increase in its span of attention.
2. Group shows an increase of sustained attention span.
3. Group shows an equal rate of increase for all the musical activities.
4. Group shows more of an increase in certain musical activities over others.
5. Group increase as seen in musical activities carries over into the non-musical activities.
RETECTIVE ABILITY:
1. Group recognizes sequence of the total program.
2. Group recognizes changes in this sequence.
3. Group recognizes sequence of activity or of a song.
4. Group recognizes any change in the sequence of an activity or of a song.
5. Group recognizes a song or a record.
6. Group shows a more immediate response to a song or a record.
7. Group sings or performs a musical activity while not in the musical activity itself.
8. Group requests songs or activities.

STIMULATION TO SPEECH OR VERBALIZATION:
1. Group shows an increase in verbal communication to each other.
2. Group shows an increase in verbal communication to the teacher or to strangers.
3. Group shows an increase toward verbalization or sound.
4. Group becomes more responsive during the singing experience.
5. Group increase as seen in singing activity or in other musical experiences carries over into the non-musical experience.

ASSOCIATION:
1. Group associates pictures with musical activities.
2. Group associates other non-musical objects or experiences with the musical experience.
3. Group shows an increase in associating actions with songs (a) in the music experience and (b) outside of the music experience.

CREATIVE SELF-EXPRESSION:
1. Group shows a growth toward creativity.
2. Group remains at imitative level.

STIMULATION TO INITIATIVE:
1. Group shows an increase in self-initiated responses.
2. Group as a whole gathers itself together for an activity.
3. Group becomes more willing to help, e.g., passing out the rhythm instruments.
PHYSICAL STIMULATION:

1. Group shows a growth in bodily responses to music.
2. Group shows an increase in unconscious rhythmic reactions to music, e.g., tapping of feet or clapping of hands.
3. Group shows that the unconscious rhythmic reactions are becoming more conscious responses.
4. Group shows an increase in co-ordinated motor movements.

PHYSICAL RELAXATION:

1. Group shows a growth toward a more relaxed body.
2. Group shows a more sustained state of relaxation.
3. Group shows this growth not only in quiet time but also in the other musical experiences.
4. Group growth seen in the musical experiences carried over into the non-musical activities.

SECURITY AND ACCEPTANCE:

1. Group appears to become more secure within itself.
2. Group shows growth in feelings of acceptance.

SUCCESS:

1. Group shows more feelings of success.
2. Group shows that success influences behavior and additional responsiveness.

MINIMIZATION OF CULTURAL OR RACIAL DIFFERENCES:

1. Group develops feeling of homogeneous group, not of heterogeneous one.
2. Group recognizes differences, but learns to accept individual differences.

III. GRADING SCALE A

1. Passive or Negative:
   no observable response.

2. Slight non-initiated response:
   1) infrequent response is due to help by another.
   2) slight continuation after help has stopped.
   3) infrequent response only after suggestion.
4. Slight self-initiated response:
   1) infrequent response due to own initiative and interest,
   2) infrequent response not starting at beginning of activity,
   3) infrequent response which has short duration,
   4) infrequent response which may not be repeated.

5. Increase in self-initiated response:
   1) more frequent response due to own initiative and interest,
   2) more frequent response which begins with activity,
   3) more frequent response which has longer duration,
   4) more frequent response which may be repeated.

6. Active or positive:
   1) response always begins with activity,
   2) response lasts throughout activity,
   3) response will be repeated,
   4) response has comprehensive manner.

The above grading evaluations were used for all behavioral observations, for the testing situations, and for the evaluations of the melodic response. The grading for the evaluation of the rhythmic response was as follows:

IV. GRADING SCALE B

1. Passive or negative:
   no observable response.
2. Slight non-rhythmic response:
   1) infrequent response which is not on beat.
   2) infrequent response which is due to suggestion or help.
   3) infrequent response of short duration.

3. Slight rhythmic response:
   1) infrequent response which is in time with rhythmic pulse of music.
   2) infrequent response due to suggestion or help.
   3) infrequent response of short duration.
   4) infrequent response which may begin with the music.

4. Increase in non-rhythmic response:
   1) more frequent response which is still off-beat.
   2) more frequent response which is less non-initiated and is more self-initiated.

5. Increase in rhythmic response:
   1) more frequent response which is in time with rhythmic pulse of music.
   2) more frequent response which is less non-initiated and is more self-initiated.
   3) more frequent rhythmic response which is of longer duration.
   4) more frequent response which begins with the music stimulus.

6. Active or positive:
   1) non-questionable rhythmic response.
   2) sustained rhythmic response which immediately begins with the music stimulus.
   3) may be unconscious rhythmic body response.
   4) self-initiated response.

The above grading scales were employed by the investigator in the observation of the following criteria:

V. EXPLANATION OF CRITERIA

1) SOCIAL AWARENESS AND INTERPERSONAL RELATIONSHIPS:

   An indication that music did have an effect in this
area is witnessed as the group began to stay together as a unit. Dropping another's hand and refusing a hand gradually changed to taking another's hand and keeping hold of hands in the circle. The children entered into the activities as individuals when the work was initiated, but it gradually became evident that the group was responding collectively to new activities more and more as a group, was functioning together, and was helping each other. The initial response to an activity also showed that more interest was growing on the part of the children. An increase in help to the teacher as well as to each other was also affected; however, only a slight improvement was observed in the goal of sharing. Each child appeared to enjoy being a leader of the group, and the group exhibited interest and response to a child leader. Collectively, the group was friendly to strangers and interested in them; however, several of the group were overly affectionate while several others were generally unresponsive to them. No child appeared afraid of a visitor, and all visitors were accepted into the group. The unifying power of music was evident as the group grew into a stronger one in the music activities but gave the appearance of a weaker one in non-musical activities. Group relationships began to grow and also one-to-one relationships grew from activities mentioned in Chapter III.
2) **DISCIPLINE AND ORDERLINESS:**

Another indication of the effectiveness of music was found as the group began to demonstrate a more orderly behavior. This became more noticeable as the study progressed, but the overall change or growth in this area was small. Limitations and rules were placed upon the group at the initiation of the work, and the group showed little or no comprehension and response. However, during the latter part of this study, orderly behavior found acceptance in the group visual behavior. Learning to wait for instructions was a difficult task throughout the period of the study, and learning to wait for the music to begin before playing an instrument appeared to be an impossibility at first; however, very slow and gradual improvement was noticed, and the day when the group sat perfectly quiet in anticipation of the music was unbelievably rewarding. Most of the group had great difficulty in sitting or standing in their places at the first of this experiment; although this was still in evidence at the end, controlled action was much developed.

Marches as a part of the rhythm band experience also manifested decided growth in control. The initial marching was of individuals in unrelated spheres of response. The rhythmic potency seemed to be a unifying influence, and, consequently, observation found a more closely knit marching
unit. Each began to be aware that others were marching also, in front of, behind, or along side of himself.

3) **MUSICAL AWARENESS**:

This criterion was, of course, of a very simple and limited nature. Awareness was almost non-existent when the study began, but the small expansion which took place began to be more observable. Listening is an important function to be developed in every child, and this group had need of open ears to musical listening. The initiation of the experiment found no member of the group starting and stopping to the music. Although change occurred, this appeared to be more of an individual growth or non-growth rather than one of the group as a whole. A minimum of increase was evident in group awareness to the changes in tempo. Intermingling of duple and triple meters was presented throughout the study, but distinct differences in response were seldom observed. It was observed, however, that the duple rhythms were the easier of the two (or do stimulate the most response). Awareness was evident in changes in the dynamics of the music. It was more difficult for the majority to play softly rather than loudly, but the latter part of the experiment showed that this could be accomplished. It took quite a while for the group to understand what was wanted when the music or the teacher told them to play loudly or softly, and, although the group as a whole
grew in awareness, several of the children did not. Music as a background was supplied during non-music activities, and observable group awareness to the music when played was slight. However, several of the children showed immediate responses to music when it was begun and when it ended.

4) **GROUP PARTICIPATION:**

In this area also the study indicates that music stimulated development which progressed very noticeably. Nine participants began the study, and as time passed there was less consciousness of nine children than of a group having nine participants. The children at first, of course, did not know the activities, and this accounted for some lack of participation and hesitation; however, repetition and extreme simplicity of activity fostered the increase in participation as was greatly noticed if one compares the first part and the last part of this study. In addition, it seemed that new activities began to be accepted more readily than those having been presented earlier. Group participation might also indicate the preparation which must take place before an activity begins, and in this experiment the group did begin to place their chairs or to find their place in the circle as preparation. Because the group enjoyed and looked forward to leadership, there was little growth over the five month period. The
interest remained constant. Although participation did increase in the music activities, it is difficult to state whether this responsive increase had affect in the non-musical activities in regard to any increase in participation.

5) **ATTENTION SPAN:**

An indication that the music experience does affect attention span is shown in the increase which occurred in the span of this group. The span was still extremely short at the end of the study, but there was a gain from five minutes to ten minutes, (however, there were times and activities which produced less or more attentive response). With a minimum of increase in a sustained attention span, the music experience did initiate an increased span which was sustained during the latter part of the study. Although an increase was evident, this increase was not of an equal rate for all the musical experiences nor of the same degree. Quiet time listening had the most noticeable growth while the rhythm band experience was of a more sustained nature throughout the experiment. The circle activities showed an increase from ten to fifteen minutes, but this increased span did fluctuate with mood and weather. Although this increase did occur in the musical experiences, there did not appear to be a definite carry-over into the non-musical activities.
6) RETENTIVE ABILITY:

With a minimum of increase the group did recognize the sequence of the total program. Prior to instruction to bring chairs for a group activity several of the children were observed putting their chairs in position and awaiting the musical experience. In addition, changes in this sequential pattern were noted by the group. As stated earlier, the program was a flexible one if it were felt that changes needed to be made. The most observable evidence of growth was in the recognition of a sequence during an activity or a song. The circle pattern began to be recognized as a child would become a "deer" after being an "elephant" or as a child anticipated a motion or action in a song. It was also observed through facial expression that a change in the usual sequence would be noted by some of the group. Verbal or physical recognition of a song melody or of a record was noted in almost every child. Certain favorites received quick responses; however, the narrow sphere of recognition did enlarge as the study progressed. Moreover, the time span between the stimulus and the response began to become shorter, and favorites developed in all the music experiences and found the most immediate response. The group also began to request particular songs or activities, and another indication of retention was noted as a song or activity was produced by a child or a smaller
group during a non-musical activity. Moreover, singing on the way to and from the school and both singing and playing musical games while at home demonstrate the power of the musical experiences to be retained and produced at other times.

7) STIMULATION TO SPEECH OR VERBALIZATION:

An indication of the communicative potency of the musical experience was observed as the group showed a marked increase toward verbalization attempts or sounds. Imitation of adult speech became evident although these attempts were a jargon or non-understandable imitation. However, words or phrases from songs or activities began to be spoken or sung, and these words and phrases became more frequent and more understandable. The singing experience evidenced decidedly more verbal attempts and responses at the end of this study than were to be observed at the start. There was also an increase in verbalization or sound between the group and the teacher, and the end of the study found some of the children actually initiating the "conversation" and not always waiting for the investigator or others to speak to them first or to ask them a question. Moreover, the very limited word vocabularies of the children began to grow— one boy added at least four words to his almost non-existent vocabulary which he used and which had limited meaning to him.

Three of the children did show a carry-over of the words and
sounds from the various musical activities into the non-musical experiences, but with the other children it appeared that the speech and sounds were stimulated by and depended upon the use of music.

8) ASSOCIATION:

An indication that some growth did take place was noted in the association which was observed between the musical activities and pictures of animals or objects. This association which was not seen at first became very evident at the close of this experiment. Another indication of development was to be found in the association of actions with songs that were a part of the singing experience; moreover, this association by the group was observed both in the singing or musical activities and in non-musical activities. However, in associating non-musical experiences or objects found in these experiences with the musical experiences there was no evidence of growth or observable association.

9) CREATIVE SELF-EXPRESSION:

In the absence of growth, the group remained at the same initiative level that was observed at the beginning of this study.

10) STIMULATION TO INITIATIVE:

With a minimum of change the group did show signs
of a limited number of self-initiated responses. Every child demonstrated at least one response which was by self-initiation. An indication toward growth was observed in the few times that the group as a whole prepared for a musical experience prior to instruction. However, some of the group may have owed their response to retention, association, or imitation. Another indication that growth was taking place was observed in the willingness of the group to help the teacher prepare for an activity. Although it was only a few of the group who exhibited this, seven reached a higher level of response during the study while two others remained constant. There is also a relationship between this willingness to help and growth which became evident in social awareness. The novelty of the experience of helping seemed to stimulate some to respond, but a few seemed to feel that this was their duty. This problem initiated the necessity of the children taking turns.

11) **PHYSICAL STIMULATION:**

An indication that music was affecting body responses was observed as the group began slowly but constantly to respond in increased amounts in the music activities. Several passive children began to move an arm or leg or some other part of the body as was desired for an activity, and the responses increased in frequency. Not only was there increase in these responses observed but also in more co-
Ordinated motor movements. Producing the gesture or movement at the designated time in a song or circle activity or complying to the rhythmic beat were desired goals, and, though it was not observed during the first of this experiment, almost every child evidenced at least a slight increase of this type. Rhythm can be an unconscious stimulant, and the group as a whole or as individuals were observed unconsciously tapping feet, clapping hands, or moving some part of the body to music in both the music and non-music activities. Music as a background to other experiences stimulated many such responses throughout the study. In several cases these unconscious rhythmic reactions began to develop into conscious responses which affected participation in the musical activities. It was also observed that stimulating music produced adverse effects on the hyperactive children; consequently, the need for quiet relaxing music was clearly demonstrated.

12) PHYSICAL RELAXATION:

An indication that music, carefully selected, can and does induce a more relaxed body was observed in the change which occurred in the group as the study progressed. Less running around, less restlessness while sitting in the chairs, and a longer span of calm and attentiveness began to be observed during the latter part of the study. This change was most clearly seen during the quiet time
activities; however, there did appear to be some carry-over into the other music activities. There was a minimum of change toward a more sustained state of relaxation and in carry-over into non-music activities. Soft music as background to eating was tried in order to induce relaxation; however, there was an absence of change. The investigator reasons that this was because it was only tried twice, and because of the novelty due to the paucity of experiments.

13) SECURITY AND ACCEPTANCE:

One of the most observable indications of musical effect was found in the sense of security which began to grow. Related to this seemed to be the feeling of being accepted, for the music experiences were planned and executed in order to exclude no one. The eagerness to come to school and to join into the activities, the increase in participation, and the growth toward personal relationships all gave indication that growth toward security and acceptance was taking place.

14) SUCCESS:

An indication that the music experiences fostered the feelings of success was seen in the smiles on the faces, the laughter of group and individual child, and in the eagerness to repeat an activity which had engendered this success. In addition, it appeared that successful accom-
plishment had an influence on behavior and on responsiveness to additional activities; the successful child was more cooperative, less tense, and felt more a part of the group. Also, the activities which proved most successful to the group were the most popular ones.

15) MINIMIZATION OF CULTURAL OR RACIAL DIFFERENCES:

Rather than a growth or change taking place in this area there was a consistency of behavior with respect to racial or cultural differences. The group never appeared conscious that others in the group might be different from them in color. The growth of social awareness and interpersonal relationships unified the children as children, not as individuals of different races or cultures.

VI. EXPLANATIONS OR OBSERVABLE CRITERIA

SOCIAL AWARENESS:

1. Helps another child.
2. Shows identification with teacher or adult.
3. Helps teacher prepare for activity.
4. Helps teacher replace materials after an activity.
5. Shows response to stranger.
   a. Stranger must go to child.
   b. Child goes hastily to stranger.
   c. Child goes willingly to stranger.
   d. Child remains with stranger.
6. Takes hands in the circle.
   b. Child shows resistance in giving hands to another.
   c. Child has to be told to take hands.
   d. Child passively takes hands of another.
   e. Child willingly takes hands of another.
   f. Child willingly gives hands to another.
g. Child takes hand of child he previously had rejected.
h. Child gives hand to child he previously had rejected.

7. Leaves group less often.
8. Leaves group but stays near to group and watches.
9. Stays with group.
10. Shows less individual play and more group play.

GENERAL AWARENESS:

1. Knows a limit and shows response when another child breaks the rule.
2. Takes a new instrument.
3. Notices which instruments or records are missing; asks for desired one.
4. Notices generally the instruments and records.
5. Brings chair into circle for activity.
6. Relates a story or picture to a musical activity.
7. Becomes conscious of clothes, colors, or room from musical experience.
8. Shows carry-over of the musical activities into the home.

PARTICIPATION:

1. Shows an increase in general response.
2. Shows an increase toward a more positive response.
3. Comes more readily into the musical activity.
4. Shows an increase in self-initiated responses.
5. Shows a more sustained response.
6. Shows a more immediate response.

DISCIPLINE:

1. Shows an increase toward sharing with another.
2. Learns to share with others.
3. Shows negative response to discipline.
   a. infantile (on floor, temper tantrum).
   b. less infantile—pouting.
4. Shows an increase toward acceptance of discipline.
5. Learns to accept discipline.
6. Learns to accept the group rules and limits.

ORDERLINESS AND CONTROL:

1. Shows less running and more walking.
2. Shows less aimless running or walking.
3. Shows less uncontrolled movement and shows an increase toward more controlled movement.
4. Learns to sit less restlessly.
5. Learns to sit quietly.
7. Matches rhythmic pattern in movement or in marching.

EVIDENCE OF COMPREHENSION:
1. Shows response to new activity.
2. Shows a more immediate response to an activity.
3. Shows response through facial or physical manifestation.
4. Responds in usual manner.
5. Shows an increase in responsiveness.
6. Does not repeat forbidden actions.
7. Follows directions of teacher.

RELEASE OF ENERGY IN ACCEPTABLE MANNER:
1. Shows less hittings of another child and more release through a musical activity, such as beating on a drum.
2. Shows an increase toward rhythmic release.

STIMULATION TO SPEECH:
1. Shows an increase in verbal sounds.
2. Tries to imitate verbal speech.
3. Says name in circle.
4. Shows an increase in verbal speech.
   a. Speaks only in reply to another.
   b. Initiates the speech.
   c. Speaks more loudly.
   d. Answers questions.
   e. Asks questions.
   f. Repeats words.
   g. Shows an increase in number of one word phrases.
   h. Shows a growth toward two or three word phrases or a sentence.
5. Shows an increase in singing.
   a. Sings during singing activity.
   b. Sings with records.
   c. Sings during playtime.
   d. Sings on way home from nursery.
   e. Sings at home.

STIMULATION TO MOVEMENT:
1. Shows an increase from passive to a more active
1. Shows a response.
2. Shows an increase in consistent responses.
3. Continues movement after help from another.
5. Shows an increase in self-initiated responses.

**ATTENTION SPAN:**

1. Shows a development toward an attention span.
2. Shows an increase in the span of attention.
3. Shows an increase of a sustained span of attention.

**MEMORY RETENTION:**

1. Shows response after mention only of the activity.
2. Prepares for activity with no instruction to do so or before activity is mentioned.
3. Knows sequence of total program.
4. Knows sequence of song or activity.
5. Describes to another a song, activity, or record.
6. Asks for song or activity which hasn't been done.
7. Does follow-up motions, such as the war whoop.
8. Recognizes that a record or instrument usually present is not present.
9. Shows carry-over into other musical or non-musical activities or into the home.
10. Shows a consistent response, generally or to a particular activity.

**MUSIC AWARENESS:**

1. Starts and stops with the music.
2. Notices music in the background while engaged in another activity.
3. Shows awareness of changes in musical dynamics.
4. Shows awareness of tempo changes.

**PLEASURE OR NON-PLEASURE:**

1. Is expressionless.
2. Smiles.
3. Laughs.
4. Is sad.
5. Shows changes of facial expression.
6. Asks for activity.
7. Asks that an activity be repeated.
8. Shows repetition of a musical activity at another time.
9. Shows willingness to participate in an activity.
10. Shows an immediate response to an activity with a happy facial expression.

VII. INDIVIDUAL RECORDS

Individual criteria were established for each child; however, as the needs of these children were essentially the same, the majority of the criteria were the same.

Explanation of the observable criteria for each child.

(Table III).

A. A.A. Age 9 years, 7 months.

Race: Filipino
Parents: Both parents at home
Siblings: none
Socio-economic Group: Low
I.Q.: Stanford-Binet, June 1955: not determined
       Stanford-Binet, October, 1955: 23
       Cottrell Intelligence Scale, October, 1955: functions at 15 month level.
M.A.: Vineland Social Maturity Scale, October, 1955: 22 month level.
Report from previous teacher, 1956:
       Age equivalent: 1.8
       Social Quotient: 21
Hearing Test: College of the Pacific. July, 1955: no response; teacher commented upon completion that he is very hard-of-hearing or has a very low mentality.

History: Age of parents at birth: mother was 23, father was 37; nine month pregnancy and normal birth. Pneumonia, age 1; sat alone, age 1; pulled himself up, age 18 months; stood alone, age 3; walked alone, age 4; toilet training, age 4; used words clearly, age 7.

Physical condition: A. is a mongoloid child having the characteristic features. His eyes have extreme myopia, epicanthus folds, narrow palpebral fissures with the typical downward and inward slopes, sight questionable—looks at people and objects very closely and walks with hands in front of him as a blind person might, mouth
TABLE III
COLOR AND DATA EXPLANATION
WEEKLY REPORT -- JANUARY

CRITERIA:
1) Social Awareness
2) General Awareness
3) Stimulation to Speech
4) Stimulation to Movement
5) Development of sense of accomplishment
6) Attention Span
7) Memory Retention
8) Relaxation

MUSICAL ELEMENTS:
1) Rhythm
2) Melody

NOTE:
The Weekly Reports for A.A. were used for this sample.
### TABLE III

COLOR AND DATA EXPLANATION

WEEKLY REPORT -- FEBRUARY

**CRITERIA:**

1) Social Awareness  
2) General Awareness  
3) Stimulation to Speech  
4) Stimulation to Movement  
5) Development of Sense of Accomplishment  
6) Attention Span  
7) Memory Retention  
8) Relaxation

**MUSICAL ELEMENTS:**

1) Rhythm  
2) Melody
TABLE III
COLOR AND DATE EXPLANATION
WEEKLY REPORT -- MARCH

CRITERIA:

1) Social Awareness
2) General Awareness
3) Stimulation to Speech
4) Stimulation to Movement
5) Development of Sense of Accomplishment
6) Attention Span
7) Memory Retention
8) Relaxation

MUSICAL ELEMENTS:
1) Rhythm
2) Melody
TABLE III

COLOR AND DATA EXPLANATION
WEEKLY REPORT -- APRIL

CRITERIA:

1) Social Awareness
2) General Awareness
3) Stimulation to Speech
4) Stimulation to Movement
5) Development of Sense of Accomplishment
6) Attention Span
7) Memory Retention
8) Relaxation

MUSICAL ELEMENTS:

1) Rhythm
2) Melody
### TABLE III
COLOR AND DATA EXPLANATION
WEEKLY REPORT -- MAY

**CRITERIA:**

1) Social Awareness
2) General Awareness
3) Stimulation to Speech
4) Stimulation to Movement
5) Development of Sense of Accomplishment
6) Attention Span
7) Memory Retention
8) Relaxation

**MUSICAL ELEMENTS:**

1) Rhythm
2) Melody

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is open most of the time, lips thick and cracked, his teeth are very irregular. His hands are broad and flabby with thumb and little fingers abnormally short. His nose is short and squat with depressed bridge, always running. His ears are small and always sore from being picked. His hair is very dry and scanty. His stature is very small for his age. Muscular rigidity is very pronounced with a jerking of arms and body. He walks with an awkward gait, usually slow, but can be very quick if he has a goal. He doesn't drool but frequently makes bubbles. His voice has soft breathy quality. He often appears to be in pain, and this investigator feels that he is physically not well.

Speech: The investigator heard no more than ten words, which were used singularly, not in phrases or sentences. It was nearly a month before any speech was heard from him, and whenever he did speak, it would come suddenly.

Behavior: He was fond of knocking things off the table with a sudden movement of the arms. He would pick objects up from the floor when told to do so, and several times the investigator noticed that he rather automatically bent down to pick up what he had knocked down, as if he knew he should not have done so. Would readily approach others, adults more than children, but often would become tense when another child approached him.

Nursery School Experience: This was the third year for A.

1) Social Awareness:

A. was very passive in his relationship with others when this study was initiated: others took his hand in the circle; another brought him into the activities; he seemed content by himself. However, A. gradually began to be aware of others, and a gradual growth took place which is clearly demonstrated when comparing the January graphs with the ones of May. He more readily took a hand which would be offered to him in the circle, and
on several occasions he put out his own hand to another child or to the worker—a major accomplishment for him.
Also, he came into the activities more readily and increased his length of stay with the group. During several weeks near the end of the study he was attentive to one of the little girls, and the two would play together during playtime or would be partners in the circle activities. Although his relationships with the group developed; he continued to show a fear of others; he cringed and became extremely tense if a child approached him. This was less evident during the music activities, however, than at other times. The music activities appeared to relax him and to aid his relationships and responsiveness to others.

2) General Awareness:

While there was a minimum of growth, A. did begin to point to articles of clothing, to associate a picture with a musical animal activity, and to bring his chair into the activities.

3) Stimulation to Speech:

An indication of the growth which took place was evidenced in the increase in verbal speech. Grunts and noises were the only evidence of speech which were heard during the first two weeks of the experiment; then A. said "Hi!". However, his communication did not commence until nearly six weeks had passed. At this time he said his
name in the opening circle. From that morning until the end of the study, A. gave his name almost every time when asked, and each time said it clearer and louder than before. Following this response he gave the war whoop which was part of an Indian activity on the drums, and he also began to say "see-saw." Additional words or sounds which were initiated by the musical experiences were "baby," "beep-beep," "shoe," "horse," "mama," "frog," and "s-s-s." Moreover, these words and sounds were associated with something (a particular song, record, action, game or picture), and did have a meaning: when the group was asked what the shoemaker makes, A. immediately leaned over, touched his shoe, and said "shoe." His very limited vocabulary developed during the study, and the words and sounds also became more understandable.

4). Stimulation to Movement:

Another indication of musical effectiveness was observed in his gradual change from a very passive child to a less passive one. During the first months of the study his responses were guided and stimulated by an adult; however, he was then observed continuing a response after initial help by an adult, and during the latter part of the project he showed instances of self-initiation: squatting to be a duck; combing his hair in "Mulberry Bush;" or weeding (hand and body movements) in "In the Garden." These were few and
not continuous, but one such response would be observed every day through the month of May. Also, A. tried very hard to learn to jump. During the first part of this study he was helped by adults on both sides, then by only one. Finally he was able to jump unassisted, a fact which delighted him. Moreover, this jumping skill was further enhanced into jumping in rhythm to the music and at the right time in a musical game.

5). Development of Sense of Accomplishment.

This was indicated by any observation of A. after he had responded to a musical stimulant. His happiness was very evident in his smiles and laughter after each simple success. Moreover, this investigator believes that these feelings of success and happiness were the primary factors in the growth which took place in speech and in group participation.

6). Attention Span:

An indication that music did affect attentiveness was noted during the latter part of the study. When this experiment was started it was questionable if he were really attentive to anything except an occasional toy. From an almost non-existent span of attention, A. was observed staying with the group more consistently and for gradually longer periods of time. Moreover, it was noted that the autoharp interested him, and he would sit, listen,
and watch as the autoharp was being played. However, in this case, whether it was the hand movement or the musical sound itself which attracted him and held his attention is questionable; however, he always came to the instrument immediately when he heard it played.

7). Memory Retention:

An indication that growth was initiated can be noted from his remembering the actions that accompanied circle games or songs, giving the war whoop, and saying words to songs. In addition to what the investigator observed in school, A's. mother reported that similar responses were noted at home.

8). Relaxation:

With a minimum of affect, music did aid A. toward relaxation. However, this was difficult to achieve because he was a very tense child. The change which did occur was not consistent and was most apparent during the quiet time, especially in relation to the cello or the autoharp.

B. V.A. Age 10 years, 6 months.

Race: Caucasian.
Parents: Both parents at home.
Siblings: Half-sister, age 28, not at home.
Socio-Economic Group: Low
I.Q.: Stanford-Binet, September, 1957: 27
M.A.: 2.7
Report from testing done in another state August, 1956:
Typical mongoloid child; mental age, 3 years;
behavior on 4 year level; abstract intelligence
below the mental age of 2½; maximum mental age is
unlikely to exceed age 5 years.

**History:** Age of parents at birth: mother was 39, father was 28. Length of pregnancy was 8 months; labor was 12 hours; weight was 6 pounds 1 ounce; during third month of pregnancy mother had very bad cold and was given a series of penicillin shots "probably caused it" (the deficiency); stood alone at 13 months; walked at 20 months; toilet trained at 3 years.

**Physical Condition:** V. is also a mongoloid, and her general features are similar to those of A., but she has much hair which doesn't seem to be dry. She has an abdominal protrusion. Her tongue is flabby and coarse, and her mouth is open 75 per cent of the time. Her skin is rough, particularly her hands and arms which are reddish and covered with small white nodules. Her fingernails seem very brittle and are sharp. There is a question about her sight; her left eye crosses. She is a good-sized girl, but small in height for her age.

**Speech:** She was constantly talking, but it is almost impossible to understand her, for she seemed to be talking in jargon. Once in a while we could understand a single word; single words were more understandable than her groupings of words. She spoke a great deal through gestures which aided our understanding. Mother said that she can understand V. because B. mispronounces certain consonants, and the mother had made a "code" of these consonants and what V. means. The author never heard her say her own name, but she did call the others by name.

**Behavior:** She was very affectionate and well-tempered except when she showed her stubborn moments in refusing to do what was asked of her. Her reactions to any discipline were very infantile—pouting and folding arms in front of her, lying on the floor, or going into a corner. Soon, however, she would be smiling and laughing. She was an imitator, and imitated the investigator a great deal. She also liked to help the teacher or the investigator and would also help other children in the musical activities. She sought attention and showed more response when alone with the therapist.

**Nursery School Experience:** V's. first year.
1). **Social Awareness:**

Growth was indicated through her leadership of the group, her help to the teacher and the group, her imitation of the investigator, and her responsiveness to strangers. V. is a very affectionate child, and during the entire project she readily took hands with child or adult; moreover, she always ran to greet every visitor who came to the school. Her special likes were leading the rhythm band and being "teacher" by telling the group through gestures what to do.

2). **General Awareness:**

Indication of musical effectiveness was noted in the following: awareness of articles of clothing; awareness of the rhythm instruments as regarded size, new additions, changes, and change in usage; and association, to a very limited degree, of a musical word or idea to a non-musical situation.

3). **Discipline:**

With a minimum of change, it was observed that V. did become more cooperative and more responsive to instruction. She was a very stubborn child who wanted her own way, and her reactions to discipline were expressed in pouting and turning back from the group, or pouting as she sat or lay on the floor. These reactions were noted all through the study, but during the latter part, V. accepted a few reprimands by remaining in her chair instead of lying on the floor or sitting with her back to the group.
4). **PARTICIPATION:**

An indication that music stimulated responsiveness was in evidence as V. very gradually began to be more of a participant in the group activities. She always joined the group readily, helped another child, or kept the group together, but she watched rather than responded. However, she was always very responsive when individual attention was given to her or when she and one or two others joined together. This appeared to be related to her desire to lead and be "teacher," and served to substantiate our belief that she could do the activities but just wouldn't for some reason. Her group participation did increase.

5). **STIMULATION TO SPEECH:**

An indication of growth was noted in the increased number of one word responses which up to that point had been the limit of her verbalization. She could say the names of all the children, with the notable exception of her own, and in her new and understandable vocabulary were the words "cello," "pop," "frog," "boom boom," and "nose." These words were heard in the last two months of the study, especially during the singing and listening experiences. However, her communication with others was a mouthing of words which also was noted to increase in frequency. She would "explain" actions to the other children or to strangers, would "tell" the group what to do, and would "scold" the
group if it didn't respond as she desired. This mouthing was accompanied by gestures which gave the group the clue to her verbal attempts. No change was found in her responsiveness to questions. Twice during the study, she responded to a question, once to give the name of a child and another time to say the name of the cello. It seemed that she talked when she wanted to do so, not upon request.

6). **MEMORY RETENTION**:

An indication of development was observed by facial expressions or speech, primarily when in the group, by her leadership of the group, by her responsiveness when given individual attention, and in her helpfulness to others in the group. Moreover, she knew the sequence of the school program and on several occasions anticipated it by readying her chair or getting the rhythm instruments, and V. also indicated that she knew the sequence of the favorite "Put your finger in the Air" song when it was heard on a record having a different sequence of action.

C. V.B. Age 6 years, 7 months.

Race: Caucasian
Parents: Both at home.
Siblings: Two brothers, ages 33 and 31, and sister, age 29. Younger brother is at home.
Socio-Economic Group: middle.
M.A.: Stanford-Binet, August 1956: 2 years or higher.
M.A.: potential may be higher when vision is corrected.
Testing: Stanford-Binet, August, 1956: There is apparently normal hearing, but vision is
extremely poor--"could see accurately only when article was about four or five inches from eyes." There was difficulty in using the right eye independently. Speech wasn't clear enough for evaluation of verbal responses. Attention span was short, but interest was sustained in item where vision and comprehension were adequate. Method of attack: trial and error.

Doctor's Report, July, 1956: Well-developed rather small middle phalanx of fifth finger; can perform all common acts in life; cannot put words together for phrasing but understands most anything inferable to single object or action; shy.

History: Age of parents at birth: mother was 47, father was 49. Eight months pregnancy; during seventh month mother was put to bed with ice packs to stop hemorrhage; long labor, 21 hours; blue baby; weight at birth 7 pounds, 2 ounces; sat alone, 7 months; stood alone 11 months; virus condition, 12 months; walked alone, 15 months; due to virus his lungs would always fill with phlegm up to age 4 years.

Physical Condition: He is a very small and frail looking child with a baby face. He, too, is a mongoloid, but his features are not extreme as in the above two cases. He is very uncoordinated; consequently, his walk is unsteady.

Speech: He spoke very softly in shy fashion with his head bent down. Several times he voluntarily spoke, but almost always someone had to ask him a question or ask him to repeat a word before he said anything. Words weren't clearly said, but were understandable. He spoke only single words at school.

Behavior: He was very good-natured and almost always smiling, but was very sensitive to correction; then he pouted and placed his head even lower. He liked to play by himself, but he also seemed to enjoy the group activities. V. showed aggressive tendencies at times by hitting others and even the investigator. It appeared to be a playful aggressiveness, for he was smiling and laughing at the time. This tendency was also displayed when he threw blocks. He was very quiet and undemonstrative when this project began. It was during the latter two months that this self-assertion appeared.
Nursery School Experience: The first year for V.

1). Social Awareness:

An indication of change was noted as V. became more responsive to others. A very shy child, he was content to play by himself at the start of the study, and this was observed throughout the five months; however, his readiness to enter a group activity, his willingness to have another take his hand and his participation with the group expanded, as the study progressed. Although he would take a hand of a child or adult which was offered to him in the circle activities, he was never observed to extend his own hand to another.

2). General Awareness:

An indication of development was observed as he showed selection in his rhythm instruments, showed an association of a picture or object with a musical activity, pointed to articles of clothing, and was the only one of the group who comprehended and followed instructions given by the investigator to the group during an experiment.

3). Discipline:

Rather than growth in his conforming to the group rules and behavior, V. fluctuated around a central level. He was never a discipline problem, but he did become more and more self-assertive as the study progressed. It appeared
to be a game with him, for when he was asked to return
or was brought into the group he came willingly. It was
during the last month that he ran away from the group
frequently and was constantly on the move, contrary to
his behavior during the first part of the experiment.
Moreover, it was noted that the presence of his mother at
the school did not curb this behavior.

4). Stimulation to Speech:

An indication of development was observed in his
increase of verbalization, in his consistency in answering
and responding to questions asked of the group (although
he was never heard to initiate a conversation with another),
in his singing (he also was heard singing to himself on
several occasions), and in the alteration of his audibility.
Because of his shyness, V. spoke with his head bowed low
and in a very soft voice at first; however, as the study
progressed he began to speak less softly and more clearly
and to not bow his head quite so low.

5). Memory Retention:

An indication of effect was demonstrated by his
remembrance of actions (circle, record, and singing
experiences), of songs, and of sequences in games or songs
and by his melodic retention of music from any of the
musical activities.
6). **Participation:**

An indication of growth was observed in the change of responsiveness throughout the study. V. was very quiet and passive when the study began, but, as he became acquainted with the activities, he became more responsive in each experience. Moreover, during the month of May he was observed trying several circle games which he had not tried previously.

7). **Attention span:**

A minimum of increase was observed, and the gain made declined during the last month (the month of restlessness and increased mobility). However, V. sat quietly during the listening and quiet time experiences, for he very much liked both the cello and the autoharp.

D. L. C. Age 6 years, 10 months.

Race: Caucasian
Parents: Both at home.
Siblings: Two brothers, ages 8 and 10.
The brother of eight is also very severely deficient. He was in the nursery school when the investigator began this study, but since he was there only two weeks, he is not included in this report.
Socio-economic Group: Low
I.Q.: Unable to be determined.
Psychological Report: February, 1957:
Adaptive behavior with Geselle material is at 6 month level; language development is at 8 month level; appears to be functioning at 16 month level; social quotient is 21; she will never exceed 3 year level.
History: none available.

Physical Condition: L. is a blond haired little girl who is small for her chronological age. She has no physical anomalies, and from a distance doesn't appear to be atypical. However, her eyes always have a very blank stare and she has a strange little smile on her face. Her hyper-active behavior immediately keynotes that she is not a normal child.

Speech: There was no speech, and the only sounds were a type of whining or screaming.

Behavior: She was an extremely hyper-active child who was continually on the move, walking or running; moreover, there was never a goal toward which she was moving. Something was always in her mouth; anything that she could pick up went immediately into the mouth. She was not toilet trained and needed constant supervision. The other children seemed to like her, and two of the little girls helped her during the musical activities. She had to be fed during snack time.

Nursery School Experience: L's. third year.

1). Social Awareness: With a very minimum change L. appeared to become more aware of others. She always allowed another to take her hands in the circle or to work with her in all the activities, but she ran away from the group if no one held on to her. During the first three months of this study L. ran away constantly and would stay away from the group if left alone; she seemed oblivious of its existence; however, during the latter two months she seemed to be watching the group when ever she ran away. Then she gradually came toward the group and stood near, although she never came back into the circle of her own volition. She also began to stand near and to watch the group during non-music activities.
2). **General Awareness:**

L. remained constantly negative during the study.

3). **Participation:**

L. participated more with the group; a primary factor in this change was the fact that she was kept in the group. Although her responsiveness to the musical activities was never self-initiated, she seemed to be less "lifeless" with the adults who helped her. In addition, on one or two occasions during the circle activities she stepped back and forth with the group without help from another.

4). **Attention Span:**

An indication of growth was evident, though not constant. There was no span of attention at all when the study began, but during the latter months it became noticeable that it had slightly increased. It was during the listening experiences (record and cello) that she was observed sitting quietly and attentively for longer lengths of time. The cello seemed to fascinate her, and during several cello experiences L., the restless hyper-active child, sat quietly for eight or ten minutes.

5). **Memory Retention:**

In the absence of growth there was no observable change.
6). Orderliness and Control:

An indication of change was most evident when one observed and compared the behavior of L. in January to her behavior in May. In the beginning she was extremely hyperactive and rarely still; at the end she was still hyperactive, but her constant running had changed to less constant walking, she moved less aimlessly, there was a decrease in the number of times she ran away from the group, she did not jump up and down as constantly, and she was able to stand more quietly. L. was tied to her chair by ribbons in order to keep her with the group and to enable the investigator to help her without holding on tightly. The constant squirming observed at the first of this experiment developed into less squirming and then into rhythmic leg swinging or tapping. Another example which cites the remarkable change was an observation made in the fourth week of February. L. was tied in her chair as usual at the beginning of rhythm band and then, as usual, untied at the end so that she could march with the group. On this day L. continued to sit in her chair as the group marched away, and she sat in her chair during the entire march; she had never sat quietly and free in her chair prior to that morning. The quiet time and listening experience were essential for her, and her restless behavior did undergo a change during these times. As has been mentioned previously, she sat eight or ten minutes
while listening to the cello. In addition, the cello quieted her crying on several occasions. Another area of improvement was in her toilet habits at school; the frequency of wet pants declined.

7). Evidence of Comprehension:

There was a change in that she did watch the group during the latter months, and her eyes followed the bow as it crossed the strings of the cello. During the last month her expression seemed to be less blank.

E. S.H. Age 6 years, 10 months.

Race: Mexican
Parents: Both at home
Siblings: Two brothers, 3 years and 4 months
Socio-economic Group: low
I.Q.: Undetermined
M.A.: Undetermined.

History: Age of parents at birth: mother was 17, father, 17. No information on pregnancy or birth. Toilet trained at age 2 but has occasional accidents; walked at age 3, the same day that her younger brother began to walk; small as a child and very sickly.

Physical Condition: S. is a mongoloid child who probably has every characteristic to be found in this type of deficiency. She has an extremely protruding abdomen which was a large factor in her awkward gait; she seemed to be leading with her stomach whenever she walked. She walked very slowly and resembled a gorilla with her slouching walk and dangling arms. Her eyesight is severely impaired, and her eyes appeared crossed. She has glasses, but never wore them at the nursery school. Surgery may be necessary.

Speech: The only word which the investigator heard from S. was "no." and this was in a whisper-tone; her hand
also gestured the "no" reaction. She did seem to comprehend some words spoken to her, but her vocabulary, to the investigator's knowledge, is this one word. She comes from a bilingual home, and up to the age of four when she entered the nursery school, she had heard very little English; consequently, at that time it was difficult to determine whether her lack of comprehension was due to the language barrier or to the severity of the deficiency.

Behavior: She was on the move a great deal but very slowly. She was always very good-natured, and even when she said "no" or refused bodily to do something her strangely happy expression would hardly change. She did refuse to comply to suggestions and commands often. She liked to be alone and very happily played by herself. Sometimes she appeared to be oblivious of the group, but her interest in the group grew, and she watched if she were not participating.

Nursery School Experience: Third year for S.

1). Social Awareness:

With a minimum of change S. showed a closer relationship with the other children in the group. The growth, however, was not a constant one. She extended her hand to others in the circle, began to help another child during the circle and rhythm activities, came into the circle more willingly and more often of her own volition, and began to stay nearer the group when she left it. At the mid-point of the study, S. was absent for two weeks. When she returned she reverted to her old pattern of withdrawal from the group. However, it was interesting to note that she did not leave the group as before but stayed near it and did participate with the group. During the month of May, there was an improvement in her group relationships.
2). **Orderliness and Control:**

An indication of improvement was seen during quiet time and as she stayed in her chair during the listening and rhythmic experience. There was no change, however, in her wandering during the non-music experiences; the gains made did not appear to carry over into these other activities.

3). **Attention Span:**

An indication of growth was observed in the span increase of almost nothing to five minutes during the record and listening experiences of a more quiet nature. The other activities saw a fluctuating improvement which found her remaining with the group for longer intervals, although the span in the circle activities each day varied according to her mood.

4). **Participation:**

An indication of growth was observed in her change from all non-initiated responses to an increased number of self-initiated responses during the last month. She responded most frequently to the activities which she appeared to like the most, and she had consistent response in these activities; however, there was no consistent response in her general participation. The animal activities, record time actions, and the finger action activities elicited her best response. The frequency of response with the group or by herself also
increased during the study.

5). Memory Retention:

With a minimum of change S. did show retention of the musical activities following the two week's absence. In addition, on several occasions she brought her chair to the piano for the rhythm band experience at the correct time and prior to any instruction to do so.

6). General Awareness:

With a minimum of growth S. did seem to know the program sequence, to be able to associate a few pictures or parts of the body with a musical activity, and to prepare for an activity with the placement of her chair.

F. G.P. Age 5 years, 8 months.

Race: Caucasian of Greek culture.
Parents: Both at home.
Siblings: Sister, age 9 and brother, age 9 months.
Socio-Economic Group: low
M.A.: Stanford-Binet, September, 1956: 2 to 2½
Doctor's Report: September, 1956. He spoke only a few Greek words at age 4; probably a mongoloid; had upper respiratory infection with large cryptic tonsils.
Stanford-Binet, September, 1956: He does not wait for instructions. Has no insight. Has possible visual problem--holds materials about five inches from face. Language is immature, single syllables, mostly Greek. This test could only estimate ability; there was sustained interest in manipulative items; extent of retardation cannot be determined now but seems to point to marked retardation.
History: Age of parents at birth: mother was 35, father was 33. Mother had high blood pressure throughout pregnancy; labor, 5 hours; instrument baby; weight 7 lbs. 7½ pounds; slow developmental history; sat alone, 8 months; stood alone, 19 months; walked at age 2; speech around age 3.

Physical Condition: G. is a chubby little boy with a protruding abdomen which is a mongoloid characteristic; however, he has very few of the other typical features. He is small in height. He became sick several times at the school, but physically appears to be a healthy boy.

Speech: He attempted to verbalize a great deal in speech and in song. He was difficult at times to understand, but the investigator could understand him more often in the singing. He talked in both English and Greek.

Behavior: He was a happy child who was almost always smiling and laughing. However, there were several crying spells for no apparent reason to the teacher or to the investigator. He played easily alone or with the other children and showed eagerness to participate in the musical experiences. He also exhibited interest in the other children and on several occasions was helpful toward another.

Nursery School Experience: This was his first year.

1). Social Awareness:

Indication of growth was observed in his helping other children and the teacher, giving a drum to a volunteer who did not have one for the rhythm experience, taking hands willingly in the circle, extending his hand readily, keeping the group together at times, and bringing other children into the circle or into the group who had left it. G. entered the nursery school three weeks after the study began, and it was immediately noticed that he was
a very friendly child. Thus his first responses are higher on the graph than the initial responses of the other children.

2). General Awareness:

An indication of growth that marked him above the others in the group was noted by his awareness of the instruments, records, and program sequence, his association of pictures, colors, and clothes to the music activities, and his awareness at all times of the use of music as background; he always told the investigator when the records had stopped.

3). Stimulation to Speech:

An indication of large growth was observed in his singing of the songs and games in group or alone, responding to questions whether to the group or to him, asking for certain songs, records, or games, in singing on the way home from school and at home, and in the attempt to speak and to sing at all times—he would often repeat a word after an adult had spoken. G. came from a bilingual home and knew very little English before he entered the school; the primary portion of the vocabulary which he developed was from the musical activities. In addition, he was frequently more understandable in his speech at the close of the study than at the beginning.
4). **Memory Retention:**

An indication of decided growth was observed during the singing and rhythmic activities. His retention was always noticeable after any absences from school.

5). **Participation:**

An indication of development was observed in his generally high responsiveness in all activities, and his facial expressions and willingness to participate indicated that he enjoyed the school experiences. However, during the last two months of the study there was a slight decline in his participation as a result of his following another child and leaving the group. G. tried to do each activity presented, and he was the only child to tip-toe and to respond to loud and soft drums.

G. C.P. Age 5 years, 6 months.

**Race:** Caucasian

**Parents:** Both parents at home.

**Siblings:** Step-brother, age 16 and sister, age 8.

**Socio-Economic Group:** Low

**I.Q.:** Stanford-Binet: 53

**M.A.:** 2.8

**History:** Age of parents at birth: mother was 24, father was 36. Length of pregnancy was 37 weeks; length of labor, 3 hours 38 minutes; no unusual factors in pregnancy or birth; weight, 5 pounds, 5 ounces; had severe anemia from age 4 months to 12 months; difficulty in swallowing and in nursing and unusual crying were evidenced before age 6 months; restless; slept very little and would awaken crying which continued for hours; walked at 14 months; slow to toilet train; mother shows ambivalence to fact that he is retarded.
Physical Condition: C. is a very normal looking child whose physical size approximates his chronological age. Has larger than average ears but no other physical anomalies.

Speech: Talkative and understandable most of the time. However, he had moods when he refused to talk and when he was very silly; this silliness was also evidenced in his speech. He sang songs learned at school, and the words were almost always clearly sung.

Behavior: C. was a very restless and active child but less so if the activity or an object interested him. He seemed to delight in teasing. All participation and comprehension seemed dependent upon his mood. He also seemed to delight in watching the other children try to do the things which he could do. He was very aggressive and often hit the other children. Masturbation was much in evidence.

Nursery School Experience: This was the first year for C.

1) Orderliness and Controlled Release of Energy:

With a minimum of change, C. remained the hyperactive child observed at the start of this experiment. During the first part of the study he showed signs of less restlessness, of staying with the group, of sitting less actively in his chair, and of waiting for the music to begin before beating his drum—this happened twice during the latter part of the study. New activities which were challenging to him held his interest, and, consequently, his behavior improved. However, the repetition necessary for the other children caused him to lose interest and brought back the restless behavior. However, during quiet time he appeared more relaxed and sat more calmly.
2). Participation:

C. began and remained rather constant at a high level. During the first part of the study when his orderliness was increasing, his participation was high. He greatly delighted in requesting a song or game, but he would then often only watch. It was believed by this investigator and the teacher that C. was capable of a higher level of participation than the others, but his responses were dependent upon his mood.

3) Stimulation to Speech:

There was a minimum of change during the study, for C. spoke very well when the work began. An increase was observed in his vocabulary, which began to include words and phrases of songs and games. Moreover, he sang during non-musical activities, on the way home, and at home, as during singing and record time.

4). Memory Retention:

An indication of growth was observed, but it was at a high level throughout the study. He grasped and retained activities, actions, songs, and sequences readily, and these were in evidence during the music activities, during non-music activities, on the way home from school, and while at home. In addition, his requests for songs, records, and activities exhibited his retention.
5). Social Awareness:

In this respect, C. remained at a fairly constant level. He was a very friendly and affectionate child who readily took hands or gave his own in the circle. Although friendly to all the children, he was never observed helping another during an activity. However, there were times when he showed aggressive tendencies toward others, but this was only noted during non-musical activities.

6). General Awareness:

An indication of growth was observed in his ability to relate and associate objects, colors, and stories to a musical activity, song, or record. Whether in or out of the room he was the first to notice things in the environment; these were not always related to any musical experience.

7). Attention Span:

With a minimum of change, C. showed an increase in ability to sit quietly and listen or to remain for a longer time with the group, but during the latter part of the study a regression was observed.

H. R. W. Age 7 years.

Race: Caucasian
Parents: Both at home.
Siblings: Brother, age 9 and sister, age 6.
Socio-economic Group: Low
History: Age of parents at birth: unknown. Length of pregnancy was 9 months; length of labor, very short--3 hours; mother's illnesses during pregnancy--sinus, hay fever, toothache, and worry over death of her father. Weight, 4 pounds, 14 ounces; born with cleft palate; difficulty in nursing during first 6 months; stood alone 2½ years; walked alone, 2½--3½ years; pneumonia, age 18 months; had habit of pulling hair and sucking her finger--when baby she pulled out all her hair four times; toilet trained and has dressed herself since age 4; is problem at home when they take things from her; she "gets mad."

Physical Condition: She is facially a very malformed child: misshapen face with sunken areas about the temples; no outer ear; both front teeth protrude; and has or shows evidence of a cleft palate. Her body is otherwise seemingly normal, and she seems to be a normal size for her chronological age. Her hearing is very questionable. Testing at the College of the Pacific Speech Clinic gave her a 50 to 60 decible loss. She has a hearing aid which she rarely wore, and it was questionable to what degree this hearing aid helped her. The tester from the college felt that R. was either very severely retarded or would only do what she wanted to do.

Speech: Verbalized constantly but was not understandable because of the mouth malformation. She would try to repeat words said to her, and she did appear to comprehend words spoken to her.

Behavior: R. was very friendly and helpful and most cooperative except during her temper tantrums. These tantrums were the result of discipline and having to do what she did not want to do. She was eager to pleasea and initiated the investigator in action and in dress. Much comprehension seemed to be visual, but it was most difficult to know how much she did hear. It was almost impossible to get her to share a toy or object; she would consider them hers, and to share or give up these objects initiated a temper tantrum.

Nursery School Experience: First year for R.

1). Social Awareness:

An indication of growth was observed in her willingness to help the teacher and the other children (although she was
sometimes too rough), by her identification with the investigator, by a growing relationship which developed between R. and another child, and by her social responsiveness in the circle activities. Although a very friendly and cooperative child, R. also exhibited strong possessive tendencies; she claimed certain instruments or toys as her own and would not share them. However, during the latter two months of the study, she was observed sharing more willingly during the rhythm band experience and not sharing at all during non-musical activities.

2). General Awareness:

An indication of growth was noted in her awareness of what others were wearing, by her association of objects and pictures to the music experiences, and by her awareness of things in the building and outside.

3). Discipline:

Rather than a development toward a more positive behavior, there was a fairly constant behavioral pattern which saw a decline during the latter part of the study; however, a slight increase was observed during the last month. R. was subject to temper tantrums if she could not have her own way. This was most observable during the rhythm band and singing experiences, for R. felt that she should have the chair next to the piano (because of her
hearing loss she had been placed next to the piano at the start of the study). This action was later deemed unnecessary. Her reactions to this situation and all situations in which she had to conform were sitting and pouting, lying on the floor, or having a temper tantrum; the latter two increased and then declined during the last month.

4). Aid to Better Speech:

Rather than showing improvement, her speech remained unchanged, for R. appears to have a cleft palate which makes her very difficult to understand. However, the music activities did stimulate her speech attempts, and she was observed imitating speech of others, and singing with the group or alone.

5). Participation:

An indication of growth was her constant participation which improved throughout the study. However, a slight regression was observed during April (a time of the most notable temper tantrums). Although R. was the most responsive child in the group, it was felt by the teacher and the investigator that her responses were primarily in imitation of others because of her severe hearing loss. She watched others for the beginning of the activity, but then appeared to respond on her own.
6). **Memory Retention:**

An indication of growth was observed in her high retention of activities, sequences, and actions, although she was absent a great deal during this study.

I. **T.Y.** Age 6 years, 10 months.

- **Race:** Oriental
- **Parents:** Both at home
- **Siblings:** One brother, age 5
- **Socio-economic Group:** middle class.
- **I.Q.:** Stanford-Binet, June 1955: 40 (estimate).
- **M.A.:** Stanford-Binet, June 1955: 2.0 (estimate).

Stanford-Binet, 1955: She looks like normal 2 year old; seems quiet and well behaved; progress in toilet training shown in that she indicates when she needs to go; said only two words—"OK" and "goodbye"; sat still but no verbal response; doubtful that attention was more than fleeting; had interest in toys; assumed that she is severely retarded but potential may be higher, for she was able to pass one test on the three year level.

**History:** Age of parents at birth: mother was 30, father was 33. Length of pregnancy, 8 months 2 weeks; length of labor, 16 hours. Weight, 5 pounds, 10 ounces; no sickness or problems during pregnancy; very slow in development; not talking or walking by age 2; consulted doctor at age 2.

**Physical Condition:** T. is a very normal looking Chinese girl who is small for her age but has no physical anomalies. Healthy in appearance.

**Speech:** Her vocabulary was very limited and consisted of four words: "OK," "Hello," "Goodbye," and "Hi." She did hum occasionally during the music activities or during playtime. She spoke only when someone else spoke to her first or said one of the above words.

**Behavior:** T. was a very passive and quiet child who seemed like a little doll either sitting or standing. She was always very happy and would usually have a smile on her face; she rocked or bounced and laughed when very happy. She was cooperative in a passive manner, but there were times when she showed a stubborn streak;
she would refuse to participate by pulling away from the person asking her to join in and by making a face. She had a decided dislike for the bathroom and it was a big problem to get her to wash her hands. A very neat child, she would refuse to get herself dirty, but she didn't like to wash her hands.

**Nursery School Experience:** This was T's, third year.

1). **Social Awareness:**

In the absence of change T. remained the very passive child that was observed in the beginning of this project. She took any hand offered to her, went with anyone who led her, and accepted passively the help that any child or adult gave her. Although passive in her relationships with the group and with adults, T. on one occasion did extend her hand to take the hand of a smaller child.

2). **General Awareness:**

There was no indication of growth or change.

3). **Stimulation to Movement:**

With a minimum of change, T. began to show a few self-initiated responses. It was three months before she was seen shaking her legs or giving the war whoop, and during the last month she stepped back and forth in the circle. She liked to march in Musical Chairs, and during the latter part of the study she began to clap her hands and tap her feet during rhythm band and listening time. Working with her individually the investigator observed a slight development in responsiveness.
4). **Stimulation to Speech:**

The change was in the frequency of speech in response to another person, for T. never initiated speech or increased her limited vocabulary of four words—"OK," "Hi," "Hello," and "Goodbye." Songs which utilized these words were presented to the group, but they rarely stimulated T. to say them at these times.

5). **Attention Span:**

With a minimum of change, T. seemed to more in touch with reality and with the group more frequently and for longer periods of time as the study progressed. This often had to be determined solely from facial expressions, for she sat so very quietly.

6). **Memory Retention:**

An indication of some growth was observed in her repetition of a few actions, such as the war whoop, one finger action in "Put Your Finger in the Air," and the "pop" in "Pop Goes the Weasel."

**VIII. EFFECTIVE TOOLS USED IN THE STUDY**

The investigator would like to emphasize the following as effective tools of a therapeutic music experience as observed throughout this study:
TABLE IV

GROUP GROWTH THROUGH MUSICAL EXPERIENCE
AS EVIDENCED BY COMPARISON OF OBSERVED RESPONSES
AT THE BEGINNING AND THE END OF THE STUDY.

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<td>Discipline and orderliness</td>
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<td>3</td>
<td>Musical awareness</td>
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<td>Group participation</td>
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<td>Attention Span</td>
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<td>6</td>
<td>Retentive ability</td>
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<td>7</td>
<td>Stimulation to speech or verbal sound</td>
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<td>Association</td>
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<td>Creative self-expression</td>
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<td>Stimulation to initiative</td>
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<td>Physical stimulation</td>
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<td>Security and acceptence</td>
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<td>14</td>
<td>Success</td>
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<td>15</td>
<td>Minimization of cultural or racial differences</td>
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TABLE V

GROWTH THROUGH MUSICAL EXPERIENCE
AS EVIDENCED BY COMPARISON OF INDIVIDUALS
AS OBSERVED AT THE BEGINNING AND THE END OF THE STUDY

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<tr>
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<tr>
<td>Participation</td>
<td>+2.2</td>
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<tr>
<td>Attention Span</td>
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<td>Memory Retention</td>
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<tr>
<td>Orderliness and Control</td>
<td>+1.3</td>
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<tr>
<td>Relaxation</td>
<td>+3.0</td>
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<tr>
<td>Discipline</td>
<td>+2.0</td>
</tr>
</tbody>
</table>
1. orderly well-planned program
2. variety in musical experiences
3. use of circle as a medium toward unification
4. simplicity of musical experiences
5. repetition of all musical activities
6. rapport between therapist and group.
CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

I. SUMMARY

The music experience produced changes in the patterns of behavior which tended toward the positive. These observed changes ranged from low to high.

The greatest numerical difference between the first and last weeks of the study was found in the area of success with was a +.4. The areas in which a +3 growth was exhibited were social awareness, security, and acceptance. Group participation and stimulation toward speech or verbalization gained 2.5.

A +2 gain was observed in the areas of discipline and orderliness, musical awareness, attention span, retentive ability, physical stimulation, and relaxation.

II. CONCLUSION

Restatement of the hypothesis: Music is a medium that establishes communication, stimulates learning responses, and influences behavioral changes in mentally deficient children.

The gains of both the group and the individual child indicate that this hypothesis is accepted and that music is an effective tool in a teaching program for the mentally
It was also concluded that the scales devised for this experiment were usable.

III. RECOMMENDATIONS FOR FURTHER STUDY

The investigator would recommend the following:

1. Additional use of live instrumental music and guest performers.

2. Additional experiments in the use of music as a background to eating.

3. Experimental use of music as a tranquillizer for the hyper-active and the brain-injured child.

4. A similar type of study with both an experimental and a control group.

5. Sufficient psychologic and physiological tests on each child on whom Music Therapy is to be used.

6. Finally, as the work in this field increases, there is a great need for further experiment in the use of all the elements of music with the mentally deficient child.
BIBLIOGRAPHY
BIBLIOGRAPHY

A. BOOKS


**B. PUBLICATIONS OF LEARNED SOCIETIES.**


**C. MAGAZINE ARTICLES AND PERIODICALS.**


D. PAMPHLETS.


E. UNPUBLISHED MATERIALS.


APPENDIX A

NURSERY SCHOOL PROGRAM

NO. I:

9:45 - 10:10 - Circle Activities
10:10 - 10:30 - Play Time
10:30 - 11:00 - Snack Time (divided into two groups)
11:00 - 11:15 - Quiet Time or Listening
11:15 - 11:30 - Rhythm Band
11:30 - 11:55 - Special Activity
11:55 - 12:10 - Singing
12:10 - 12:15 - Closing Circle.

NO. II:

9:45 - 10:10 - Circle Activities
10:10 - 10:25 - Rhythm Band
10:25 - 11:00 - Play Time and Snack Time
11:00 - 11:20 - Listening or Quiet Time
11:20 - 11:55 - Special Activity
11:55 - 12:10 - Singing
12:10 - 12:15 - Closing Circle.

NO. III: (Testing Period)

9:45 - 10:15 - Circle Activities
10:15 - 11:00 - Testing done during this time; others had snack time and play time or special activity.
11:00 - 11:15 - Listening or Quiet Time
11:15 - 11:30 - Rhythm Band
11:30 - 11:55 - Play Time or Special Activity
11:55 - 12:10 - Singing
12:10 - 12:15 - Closing Circle
APPENDIX B

The following songs and musical numbers were used by the investigator in the music experiences. Each number is preceded by the source and followed by the publisher's name. However, songs and activities for which no source is given are original with the investigator. Several musical examples will follow this listing of materials:

I. CIRCLE GAMES:

Coit and Hampton, Follow the Music, "Here we Go Walking Round and Round," Boston Music Co.


H. Guessford, Singing Games for Children, "Round and Round the Circle," (Original words to tune of "Round and Round the Village"), Willis Music Co., Cincinnati, Ohio, p.37.

Guessford, op. cit., "Sally Goes Round the Moon", p.2

Guessford, op. cit., "Mulberry Bush," p.25


Guessford, op. cit., "Did You Ever See a Lassie?" p.41.


Hunt and Wilson, op. cit., p. 53. "Shoe Fly."


II. CIRCLE ACTIVITIES:

Gaynor-Blake, Thirty Rhythmic Pantomimes, "The Swing"
Swing Arms - John Church, Philadelphia, p. 22

Wolfe-and Fullerton, op. cit., "See-Saw, Margery Daw,"
See-Saw, p. 54.

Originals - Windmill (arm motion)
Shaking of legs, arms, head and whole body.
Up and down
Forward and backward
Rocking (sideway)
Jumping Jacks
Heavy steps
Tip-toe
Stepping in tempo (slow walk which increased into a run)
Step-pause (a two measure walking tempo which was followed by two measures of rest)
Bending
Skipping
Galloping

Indian War Dance
Animals in movement - deer, frog, elephant, duck, fox, bunny, dog, bear.

III. RHYTHM BAND:


Song Session, "Caisson Song," op. cit., p. 10.


Indian Song.

We Sing, "She'll Be Coming Round the Mountain," Bichard and Co., Boston, p. 162.


357 Songs, "Yankee Doodle," Hall and McCreary, Co., Chicago, p. 229.


Sing Out, "La Chiapanaces," Bichard and Co., Boston, p. 64.


Improvised 3/4 and 4/4 rhythms.

IV. **SINGING**

Coit and Bampton, *op. cit.*, "Roll Your Hands Over and Over."


______, *op. cit.*, "Grey Squirrel," p. 84.


Folk tune, "The People on the Bus," source unknown.


______, *op. cit.*, "Tency, Beensie Spider," p. 73.

______, *op. cit.*, "How Old Are You?" p. 61.


**Sing and Play,** "Elevator Man," Ethel Crowshields.


*We Sing,* "She'll Be Coming Round the Mountain," Birchard and Co., Boston, p. 162.


"Put Your Finger in the Air," record (see record section).

"Join in the Game," record (see record section).

"Monkey Song," record, *Train to the Zoo.

"Two Little Blackbirds."


"Sun Game," source unknown.

"Hello and Goodbye."

"What Day is Today?"

"The Cowboy."

"One Day I saw a Downy Duck."

"Button, Button."

"Good Morning" *Music Experiences for Children,* Book I Silver-Burdett.

V. MELODIES WITH AUTOHARP:

357 *Songs,* "Green Sleeves," Hall and McCreary Co., Chicago, p. 134.


__________, "Row, Row, Row Your Boat," p. 16.

__________, "Twinkle, Twinkle Little Star," p. 76.

__________, "Lullaby," Brahms, p. 73.


_____, "Oh, Susanna," p. 54.

_____, "Zum Gali Gali," p. 46.

Selections from singing activity.

Improvisations.

VI. RECORDS:

a) QUIET TIME:


Sibelius, "Valse Triste," Ibid.

Mendelssohn, "Nocturne," (Midsummer Night's Dream) MSB 78027.

Haydn, "The Emperor's Hymn" and "Andante" (Surprise Symphony) MSB-78042.


Boccherini, "Menuet," MSB 78019.

Tchaikovsky, "Andante Cantabile," Ibid.


b) LISTENING:

"Put Your Finger in the Air," Columbia J-187

"Join in the Game," Ibid.


"Two Little Owls," Ibid.

"Fooba Wooba John," Ibid.
"Frosty the Snow Man," Peter Pan Records

"The Frog Song," Decca K-95

"Train to the Zoo," Children's Record Guild, CRG-1001


"Twenty Frogs," Ibid.


"Way Down Yonder," Ibid.

"Three Little Trains," Young People's Records - 809.

c) SNACK TIME

Same records as those listed under quiet time.
APPENDIX C

MUSICAL EXAMPLES OF ORIGINAL SONGS
WHAT DAY IS IT TODAY?

WHAT DAY IS IT TODAY?

IT'S

WHAT

DAY IS IT TODAY?

IT'S

DAY IS IT TODAY?

IT'S

ALL DAY LONG.
HELLO AND GOODBYE

HELLO, HELLO, HELLO,

HELLO, THIS IS OUR GREET-ING TO EV-RY-

ONE. GOOD-BYE, GOOD-BYE,

GOOD-BYE, GOOD-BYE, DON'T WE

ALL HAVE FUN.

"Hello's" and "goodbye's may be sung as a group or by individual response.
ONE DAY I SAW A DOWNY DUCK

1. ONE DAY I SAW A DOWNY DUCK WITH
2. ONE DAY I SAW A CURLY DOG, I
3. ONE DAY I SAW A FURRY CAT WITH

FEATHERS ON HIS BACK.
MET HIM WITH A BOW.
LITTLE FURRY PAWS.

SAID, "GOOD MORNING, DOWNY DUCK," AND
SAID, "GOOD MORNING, CURLY DOG," AND
SAID, "GOOD MORNING, FURRY CAT," AND

HE SAID, "QUACK, QUACK, QUACK!"
HE SAID, "BOW, WOW, WOW!"
HE SAID, "MEOW, MEOW, MEOW!"

The animal sounds at the close of the song may be sung by the group or by an individual child to whom leader has pointed.
RUNNING DEER*

QUICKLY

RUNNING, RUNNING, RUNNING, RUNNING,

LITTLE, LITTLE DEER.

PLAYING, PLAYING ALL TOGETHER

HAPPY, HAPPy DEER.

* May be done as a circle activity holding hands or each child may separate from the group.

This song and the following four songs were part of the opening circle activity.
Children may walk single file in a circle or may move individually around the room.

Action: body bent, hands together, arms straight to form the trunk.
JUMPING FROG

BRISKLY

JUMP! JUMP! JUMP!

JUMP! COME AND JUMP WITH

ME -------------- I'M A

LITTLE FROGGIE, HAPPY

AS CAN BE!
I'M A LITTLE DUCKY.

SLOWLY

\begin{music}
\newtime{\frac{4}{4}}
\newclef{treble}
\begin{ staff}
\newclef{guitar}
\end{ staff}
\end{music}

WADDLE, WADDLE, WADDLE, WADDLE,

I'M A LITTLE DUCKY.

WADDLE, WADDLE, WADDLE, WADDLE,

AND I THINK I'M LUCKY.

Children may do this activity alone or by two's; some children find it easier to squat by holding onto another child's hand.
CONGA LINE MARCH *

ONE, TWO, THREE, AND HOP, HOP, HOP, AND

ONE, TWO, THREE, AND HOP, HOP, HOP!

ONE, TWO, THREE, AND HOP, HOP, HOP AND

ONE, TWO, THREE, AND HOP, HOP, HOP!

* Melody is from the song "One Elephant Went Out to Play".

This is also a good rhythm song while sitting. Change the "hops" to "clap"; thus "one, two three, and clap, clap, clap".
APPENDIX D

SAMPLES OF TESTING & REPORT FORMS
DAILY REPORT

NAME OF CHILD __________________________ Music Worker ________
Date __________

**OBSERVABLE MEASUREMENT SCALE**

1. passive  2. non-initiated response (slight)
3. non-initiated response (increase)  4. self-initiated response
5. self-initiated response (increase)  (slight)
6. active

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<td>B. Rhythms</td>
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<td>C. Singing</td>
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</table>
8. Orderliness and Control
   A. Circle Activities
   B. Rhythms
   D. Singing

9. Attention Span
   A. Circle Activities
   B. Rhythms
   C. Singing

10. Memory Retention
    A. Circle Activities
    B. Rhythms
    C. Singing

11. Comprehension
    A. Circle Activities
    B. Rhythms
    C. Singing
DAILY REPORT

Name of Child ___________________ Worker ___________________

Date _______________________

EXPLANATION OF NUMBERS USED TO CHART RESPONSES

1- complete passivity    2- slight response (non-rhythmic)
3- slight response (rhythmic)  4- increase in response (non-rhythmic)
5- increase in response (rhythmic)  6- positive response

I. MUSICAL ELEMENTS

M  T  W  TH  F

1. Rhythm ________________

2. Melody __________________

II. COMMENTS
MUSIC THERAPY REPORT - M.R. NURSERY

<table>
<thead>
<tr>
<th>NAME</th>
<th>MONTH</th>
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Musical activities

Comments
MUSIC THERAPY REPORT - M.R. NURSERY

NAME ___________________________ MONTH ___________________________

WEEK ___________________________ WORKER ___________________________

I. MUSICAL ELEMENTS

1. Rhythm
2. Melody

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</table>

II. COMMENTS
GROUP MONTHLY ANALYSIS

MONTH _______________________

1. Social Awareness and Inter-personal relationships
2. Discipline and orderliness
3. Musical Awareness
4. Development in Group Participation
5. Development of Attention Span
6. Development of retentive ability
7. Stimulation to speech or verbalization
8. Growth of association and of interest
9. Growth of Creative Self-expression
10. Stimulation to initiative
11. Physical Stimulation
12. Physical Relaxation
13. Source of security and acceptance
14. Source of success
15. Minimization of cultural or racial differences.
### TESTING INTERVIEW

<table>
<thead>
<tr>
<th>Name of Child</th>
<th>Date of interview</th>
<th>Length of interview</th>
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</table>

#### Behavior during interview

#### Movements and Speech

#### Musical Tools:

#### Reactions to Music:

<table>
<thead>
<tr>
<th>Psychological reaction to sound</th>
<th>Rhythmic response</th>
<th>Melodic response</th>
<th>Ability to listen</th>
<th>Musical skills</th>
<th>Social Awareness</th>
<th>Evidence of Creativity</th>
<th>General integration</th>
</tr>
</thead>
</table>

Scale: 

| - | - | 0 | + | + | 3 | 2 | 1 | 0 | 1 | 2 | 3 |

Negative Neutral Positive

Comments: ___________________________
HOME INTERVIEW

Name __________________________________________ Date _______________________

Birthdate ______________________________________ Age _______________________

Parents' Name _____________________________________________________________

Address _________________________________________________________________

Siblings _________________________________________________________________ Age ______

________________________________________________________ Age ______

Disease _________________________________________________________________

Physical Impairments _______________________________________________________

Appearance: Height: __________

Weight: __________

Environment:

Home _________________________________________________________________

Social Status _____________________________________________________________

Relation to Parents _______________________________________________________

Relation to Siblings _______________________________________________________

Musical opportunities in the home __________________________________________

Comments _______________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
HOME INTERVIEW

Name ______________________________________ Date __________

Birthdate ___________________________ Age ______________

Parents' Name ______________________________________

Address ______________________________________

Siblings ___________________________ Age __________

...........................................................................

Diseases: ______________________________________

Physical Impairments ______________________________________

Appearance: Height: __________

                      Weight: __________

Environment: ______________________________________

Home ______________________________________

...........................................................................

Social Status ______________________________________

Relation to Parents ______________________________________

Relation to Siblings ______________________________________

Musical opportunities in the home __________________________

...........................................................................

Comments ______________________________________

...........................................................................

...........................................................................