

THE EFFECTS OF MUSIC ON A PAIRED-ASSOCIATE
LEARNING TASK OF AN INSTITUTIONALIZED RETARDATE

A THESIS

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We hereby recommend that the _____ thesis _____ prepared under
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Task of an Institutionalized Retardate

be accepted as fulfilling this part of the requirements for the Degree of Master of
Arts in Music Therapy

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Provost of the Graduate School

DEDICATION

To my devoted husband whose support and enthusiasm guided me in the completion of this degree. Also, my deepest gratitude to my loving parents. Very special thanks to Dr. Michel and other faculty at Texas Woman's University who have assisted me in developing this study.

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CHAPTER I

INTRODUCTION

To date, there is little substantial information concerning the use of music in paired-associate learning tasks with the mentally retarded. However, there have accumulated a number of such studies in other literature. These studies have not clearly defined the learning difficulties of retarded individuals. Baumeister (1965) explains that possibly some types of retarded subjects, under some conditions, can form associations adequately.

Lipman (1963), in his review of studies through 1960, stated that the less meaningful the stimulus materials used, the greater the performance deficit of retardates. He further stated that more studies were needed.

The writer believes that possibly some types of retarded subjects, under some conditions, can form associations adequately. This study was undertaken to combine music therapy and paired-associate learning with an individual who was retarded for the purpose of attempting to activate his rote-visual memory skills.

CHAPTER II

SURVEY OF LITERATURE

The term mental retardation has reflected various definitions over the years and is a label placed on a person usually during childhood. A child who is categorized retarded is recognized as having some sort of disability.

If the primary disability is the child's general inability to learn like other children do who are his chronological age, and he seems generally slow in developing physical coordination (motor skills) in comparison with his peers, he may be given the general label of retarded. (Michel, 1976)

Most retarded persons, are however, normal or within the normal range in many areas of their development. The primary deviation occurs in the area of intellectual growth where their development is significantly retarded. Aside from this, mentally retarded persons appear, react, and grow in essentially the same ways and at approximately the same rate as their normal associates (Johnson, 1958).

This concept of mental retardation combines two dimensions--measured intelligence and adaptive behavior--which are seldom, if ever, considered independently of each other. Table 1 shows the names and levels of measured intelligence (AAMD, 1973).

TABLE 1
Levels of Measured Intelligence

	Range in IQ Scores: Stanford-Binet	Range in IQ Scores: Wechsler Test
Mild	68 - 52	69 - 55
Moderate	51 - 36	54 - 40
Severe	35 - 20	39 - 25
Profound	19 & Below	24 & Below

Adaptive behavior is best explained as a composite of many aspects of behavior and a function of a wide range of specific abilities and disabilities. Intellectual, affective, motivational, social, sensory, and motor factors all contribute to, and are a part of, total adaptation to the environment (Heber, 1962). Levels of adaptive behavior are derived from the following sources: tests, such as the Vineland Social Maturity Scale; clinical observations; and evaluations of the individual's everyday behavior (Howery, 1968).

TABLE 2
Levels of Adaptive Behavior

	Level
Mild	1
Moderate	2
Severe	3
Profound	4

Adaptive behavior and other certain responses an individual makes to his environment are two aspects which sparked the interest in the use of music with the mentally retarded. Since 1940, the use of music with the mentally retarded has been reported generally in one of three different settings: 1) special education, 2) therapy, or 3) a combination of education and therapy. The mentally retarded person responds to the same basic aspects of music as does the normal individual. Music has unique characteristics which enables it to become a therapeutic means in aiding the achievement of appropriate behavioral changes (Howery, 1968).

One of the most important deficient areas of the mentally retarded requiring some change is communication. Many mentally retarded individuals are nonverbal and since music is nonverbal, it offers a desirable medium for establishing some contact between the therapist and the subject (Howery, 1968). Nordoff and Robbins described music as a universal experience in the sense that all can share in it. Music can encompass all the heights and depths of human experience and feelings (Nordoff & Robbins, 1971).

Another area of concern is the ability of a mentally retarded person to learn. It is difficult for a mentally retarded individual to acquire a change in

behavior without the capacity to learn that change. In one study investigating mental retardation, mental age, and learning, it was shown that two persons of different chronological age and different IQ's but the same mental age should have similar learning rates (Jensen & Rohwer, 1968). The study also showed that two individuals who are at the same developmental stage and who have arrived at this stage at either the same or at different rates of development, may still differ in the rates at which they can acquire new information. Thus, individuals can be retarded or normal in learning rate or retarded or normal in developmental rate (Jensen & Rohwer, 1968).

Many retarded persons require significantly more trials to reach a learning criterion. They do not form implicit associative responses as spontaneously as normal subjects (Drew, 1968). Retarded persons are inferior to normals in learning in that they do not make optimal use of provided stimuli (Jensen, 1965).

Retardates are not inferior to normals in retention learning over a period of time but rather the inequality lies in the acquisition of learning. The theory holds that there is a reduction in the intensity and meaning of the stimulus in the subnormal individual thereby affecting the short term memory (Blue, 1963).

There have been numerous studies reported demonstrating very powerful effects of paired-associate learning tasks with the mentally retarded. Paired-associate learning involves pairing something known with something unknown in order to acquire new knowledge. In most instances the known factor is phased out until there is instant recall of the new material (Goss, 1965). Paired-associate learning has been shown to be greatly enhanced when subjects are presented with visual and verbal mediators. In a study with mentally retarded subjects, Wicher (1970) discovered that greater recall was found with pictorial stimuli, but a predicted difference between photos and drawings was not significant. He also stated that a picture becomes functionally equivalent to its noun and label, and, in addition, presents a number of incidental, perceptual cues to the subject. Such cues may facilitate learning by retarding a leveling process in memory images, by enabling additional bonds between stimulus and response features, or by increasing the probability of discovering an effective functional stimulus. Wicher concludes that photographs and drawings should not be considered equivalent paired-associate learning stimuli but that different combinations of factors may account for any superiority of each. Davidson (1970) found that both verbal and imagery

processes facilitate paired-associate learning. In one study, sixty-four second grade children were divided into four independent groups. Syntactic and imagery mediators were presented to the subjects. Both kinds of mediators were shown to facilitate the learning of noun pairs, but a minimal language cue (prepositional connective) was found more effective than imagery. The results offered support for the hypothesis that verbalization is the preferred method between these two processes, but that the relative contributions that each makes to the facilitating effect are not clear.

Very little research has been found investigating the mediational value of music in a paired-associate learning task. In a study by Staples (1968) with retarded subjects, rhythm was found to be significant as a mediator while the melodic conditions were not as positive in results. Wilson (1971), in comparing rhythm, melody, and sentence mediators, found that there were more significant results with the melodic and rhythmic mediators.

Warren (1980) also paired rhythmic mediators with corresponding pictures as one paired-associate task. He then paired pre-determined nonsense syllables with corresponding pictures for another task and synthesized sounds with pictures for yet a third condition. He found that

the subjects needed more trials to meet criterion under the rhythmic condition than either the synthesized sounds or the nonsense syllables. However, in contrast, the statistical results revealed that there were more correct responses to the rhythmic stimuli than to the other learning mediators.

Hutt and Gibby (1976) agree with some studies mentioned earlier, that often the difficulty of many tasks posed to the mentally retarded person is underestimated by teachers and therapists. The retarded person requires and needs a thorough and varied program for training in all areas of learning, according to Hutt and Gibby, and this would seem to substantiate the need for studies such as this one.

Statement of the Problem

The question explored in this study was: When paired-associate learning tasks are presented to a severely mentally retarded adult male, how much difference in learning will occur under music vs. no music conditions?

CHAPTER III.

METHOD

Description of the Subject

The subject for this study was a mentally retarded caucasian male in his early twenties, institutionalized for the last sixteen years. A complete history is listed below (taken from the subject's records).

Case History - Arthur (fictitious name used to protect the identity of the client)

A. History and Background Profile

I. Medical History

A. Diagnosis

Arthur is a mentally retarded caucasian male in his early twenties institutionalized on a mental retardation court commitment for the last sixteen years. Arthur's pertinent diagnosis includes normal hearing and normal middle ear functioning. His visual acuity is also normal. His personality disorders include noncompliant behavior at times and occasional temper tantrums when upset; otherwise he is cooperative. Arthur is also fairly withdrawn and interacts minimally with others. He is motivated by food, cokes, candy, praise, and money. A psychological evaluation diagnosed Arthur as being mentally retarded functioning within the high severe range of mental retardation. His adaptive behavior level is III. It is believed that Arthur's bizarre and inappropriate behaviors exhibited during the last testing (January, 1982) interfered with his overall

functioning as well as his test performance. However, these results are consistent with those of previous evaluations. Arthur is able to make his needs known and usually does so. He uses intelligible sentences which, however, can be echolalic and perseverative in nature at times and sometimes inappropriate in content. He has adequate receptive language skills. He will also at times exhibit autistic-like behaviors. He is on a Behavior Management Program and psychotropic medications at this time which include: mellaril, vestaril, and colace. He requires supervision with bathing but is proficient in all other self-help areas. It is reported that Arthur has an excellent memory for "last week" events and that his long term memory is very good. Arthur also has the ability of remembering proper names of staff who work with him instead of only their first or last names.

II. Social History

A. Family

Arthur has had no family contact since 1974. It is suggested that his mother and all siblings suffer from cultural familial mental retardation. The etiology of Arthur's involvement is prematurity and cultural familial mental retardation. Arthur's mother was reported to have completed the sixth grade but was still illiterate. She was physically unable to work the majority of her life and died in 1963 from Lupus-Erythematosis. The father also completed the sixth grade and maintained unstable employment from pre-admission to 1974 when correspondence was ceased by him with the case worker. The subject is one of four children, all of whom are living and reported as being mildly retarded. The father is described as a person who is unaware of his children's needs, unrealistic about business, and immoral in his personal relations. He also has a very limited IQ and his behavior is reported as sociopathic in nature.

B. Foster Home Care

The subject was in foster home care beginning October 21, 1963 to admission in 1965. He was reported as being extremely hyperactive and dangerous to others and himself. Occasionally he was reported as being quiet and easy to handle, but most of the time he was constantly on the go and injuring others. He physically injured foster mothers who cared for him as well as other children in the homes. He needed twenty-four hour supervision which became impossible because of needs of the home to give due care to the other foster children. Because of difficulties in controlling the subject, a cage was built for him to live in. This occurred approximately one year prior to institutional admission. The cage was built of boards and chicken wire and was floor to ceiling being 6' x 10'. The subject played and slept there. Occasionally he was let out to eat with the others and to go to the toilet. The other children in the home were reported to be mentally retarded also, so that the competition was not as great for the subject had they been "normal". When observed by the case worker, the subject was said to appear happy and content to play in his cage. Prior to admission, the subject had never been enrolled in any type of training program. He was happy but hyperactive, often causing injury to others around him and destroying property. He had not responded to any form of discipline. He was said to be fearful of loud noises, sudden voices and of anything new or unfamiliar. He loved music and watching television.

III. Psychological Testing Results: Admission to Present

Upon admission, Arthur was administered the Stanford Binet Test, Form L-M. He was able to place objects in the form on the basis of shape indicating a six-year-old level. He also demonstrated physical ability to scribble circles, but did not attend to instructions to do this on command. He spoke only a few words.

On the Vineland Social Maturity Scale his scores were as follows: CA = 5 years, 8 months; SA = 1.9; and SQ = 31. There were no further comments on the report by the examiner. Arthur was not tested again until 1965 when once again the Vineland Social Maturity Scale was used. The following techniques were used (with inclusion of the subject's scores):

TABLE 3

CDC Developmental Scale

Ambulation-----	25-30 months
Language Receptive-----	7-12 months
Language Expressive-----	7-12 months
Toilet Training-----	13-18 months
Feeding-----	25-30 months
Dressing-----	19-24 months
Motor Evaluation-----	13-18 months
Play-----	7-12 months
School-----	18-24 months

Results of this testing indicated that the subject was functioning in the moderately retarded range. The examiner also indicated that Arthur preferred small toys and that he was especially fascinated with bugs. During the testing period it was noted that Arthur tried very hard to talk, but only a few words were intelligible.

In 1968, Arthur was administered the Peabody Picture Vocabulary Test. He scored as follows: MA = 2 years, 8 months; IQ = 29. On the Vineland Social Maturity Scale, his SA = 5.8 years and SQ = 54. The examiner did not note any change in Arthur's behavior from what was reported previously. He did state that Arthur's speech was slightly improved. The Peabody Picture Vocabulary Test was used once again in 1971. The scores were as follows: IQ = 30; MA = 3 years, 2 months. On the Vineland Social Maturity Scale Arthur's SA = 4.5 years and SQ = 40. The examiner made no comments concerning Arthur's behavior indicating no notable change from the previous testing.

In 1973 the Vineland Social Maturity Scale was used exclusively in testing Arthur's abilities. His SA = 5.2 years and SQ = 39. The examiner indicated that Arthur was communicating with short sentences and phrases and was able to follow simple commands when he was "in the mood." Arthur had mastered self-help skills such as toileting, feeding with utensils, dressing completely, and bathing with minimal supervision. He was hyperactive and unpredictable during the testing period. Arthur displayed some aggressive behavior which was usually followed by a great deal of attention and confinement to the quiet room. Arthur was reported to have frequently asked the dormitory staff if he could go to the quiet room suggesting that such confinement served as a reward rather than a punisher. The examiner stated that he was pleased with Arthur's progress at this time.

Arthur's scores on the Vineland Social Maturity Scale in 1974 were SA = 8 years, 3 months and SQ = 56. The Peabody Picture Vocabulary Test indicated scores of MA = 3 years, 10 months and IQ = 33. Arthur was reported at this time to be a "loner" on the dormitory and in other activities in which he was involved. He was reported as being highly unpredictable to the point of being volatile. He was observed to be easily frustrated and difficult to calm down. He was also reported as being combative at times, however, attacking only those his size or smaller. He was consistently upset when he did not get his way. Arthur at this point had become a problem on the dormitory and in the other activities involving him. It was suggested that his medication be changed in hopes of controlling his aggressive behavior. The medical staff agreed to observe him and make changes if necessary.

In 1976 Arthur's scores on the Vineland Social Maturity Scale resulted in an SA of 9 years, 7 months and SQ of 87. On the Peabody Picture Vocabulary Test he scored as follows: MA = 4 years; IQ = 39. Arthur now preferred interaction with staff rather than peers. His favorite reinforcers were noted as being coloring in a coloring book and drawing in a tablet.

He seemed to enjoy time spent alone with adults. He was not reported to be assisting with any of the chores on the dormitory. As a result of change in his medication, his aggressive behavior had ceased and Arthur had become a calm individual. The examiner stated that Arthur was functioning within the moderate range of mental retardation.

In 1982, the Wechsler Adult Intelligence Scale was administered to chart Arthur's progress. He scored 54 on Verbal IQ; 57 on Performance IQ; and his overall or full scale IQ was 53. Arthur displays, at times, behavior problems such as noncompliance and temper tantrums when upset, but on the average is very cooperative. He is proficient in all his self-help skills. He is rather withdrawn, interacting minimally with others. He speaks intelligibly, using phrases and complete sentences. However, echolalia and perseveration are present, especially when he seems to be tired. His favorite topics for discussion are fireworks and the Fourth of July. Reinforcers include food, cokes, candy, praise, money, drawing, and talking about fireworks. He displayed no sensorimotor problems at this time. Performance on the test placed Arthur in the high moderate range of mental retardation. The examiner commented that Arthur's attention span was very short and easily distracted throughout the testing period. He did not show any notable interest in the testing nor the tester. Arthur's progress over the past years has been slow and inconsistent at times. However, the examiner stated that Arthur seemed to be more mature and that his progress should come more easily due to his maturing.

IV. Present Treatment Program

The subject is involved in the following programming areas: The Foster-Grandparent Program; Therapeutic Recreation, Habilitation Training Program, Work-Adjustment Program, the Chaplaincy Program and Music Therapy.

The music therapist began seeing Arthur in 1981 on a one-to-one basis. He enjoyed playing rhythm instruments and singing songs sung at the Chapel services. The sessions were stopped the last part of 1981 due to scheduling conflicts. The writer began one-to-one sessions in April of 1982. The subject's behavior is similar to that previously recorded. He prefers singing songs which are familiar to him and playing the tambourine and drum.

Preliminary Procedures

The writer conducted an eight-week (sixteen sessions) pilot study with the subject using photographs and fictitious, proper names. The subject had been programmed for similar activities whereby he became familiar with certain objects used everyday and the names of those objects (Long, 1982). The pilot study aroused the curiosity of the writer and raised the question of whether or not music might aid in facilitating learning of paired-associate learning tasks involving rote-visual memory.

To find a known factor which might be utilized in a paired-associate learning type experiment with this particular subject, the writer gathered employee badges from those persons working closely with the subject on a day-to-day basis. These badges had information such as the employee's name, what department they worked in, and a photograph of the employee. The writer covered the names so the subject could not read them and presented each

badge to the client. He correctly named each photograph with the person's proper name, i.e., the first and last names. The photograph thus became the known factor in the study.

Apparatus

Material used in this study consisted of fourteen photographs of white females, sixteen photographs of white males, a list of thirty fictitious names (fourteen female and sixteen male names - See Appendix A), and fifteen musical cues (See Appendix B). The paired-associate task items then were thirty actual photographs of high school students from the high school annual taken five to seven years ago. These photos were 3½" x 2" in size and were all color prints (See Appendix C). The photos were chosen from a set of sixty photographs the subject had become familiar with during the pilot study. They were divided into two groups with seven males and eight females in one group and eight males and seven females in the other. One group was used for Learning Task I and Testing Phase I, while the other group was used for Learning Task II and Testing Phase II.

Procedure

The paired-associate learning task was to associate names (in order to learn the names) with familiar

photographs of persons in five (5) trials (criterion) under two conditions: a) without music; and b) with music as a cue (music rhythmically sung with the name).

Learning rate was derived from data recorded by a person other than the examiner, on a data record sheet provided by the examiner (See Appendix D). The data included the following information: the overall maximum number of trials to criterion and the total number of correct responses in those trials.

Learning Task 1

When presented with a photograph, the subject was asked, "Who is this?" and was immediately given the correct answer as a prompt by the therapist. The subject was then expected to repeat the prompt while still viewing the photograph.

Testing Phase I

The pictures were placed on a table face up in visual range of the subject. When presented with a name, the subject was expected to pick out of the group of photos the correct corresponding photo within five (5) trials.

Learning Task II

When presented with the photograph, the subject was asked, "Who is this?" and was immediately given the correct name of the photo in a "sing-song" manner, i.e., the therapist sang the name of the person with musical inflection (melody and rhythm). The subject was then expected to respond by saying or singing the name while still viewing the photograph.

Testing Phase II

The photos were once again placed face up on a table in plain view of the subject. When the therapist presented the name of an individual photo in a "sing-song" manner, the client was expected to select the correct corresponding photo within five (5) trials.

There were ten (10) sessions conducted in the study each lasting thirty (30) to forty-five (45) minutes in length.

CHAPTER IV

RESULTS

In analyzing the data gathered from the study, it appears that the subject functioned equally well under the condition involving music and the no music condition. In Figure 1 below, the times achieved to criterion first appeared to be different under the no music and music conditions.

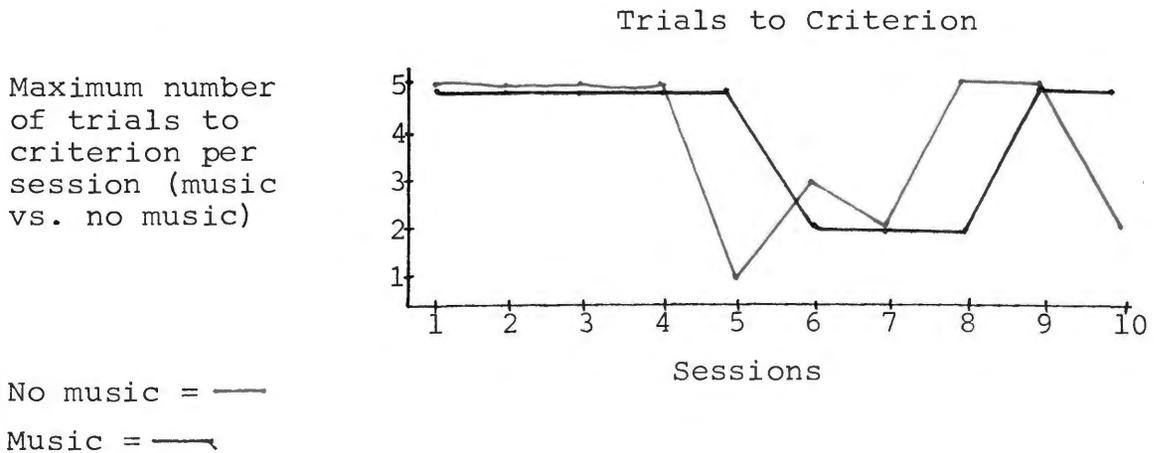


Figure 1

However, closer observation found few actual differences. Even if learning took place equally well under music vs. no music conditions, the speed and/or efficiency of learning could have been influenced by music cues. Therefore, the number of trials to criterion under both conditions were analyzed. As seen in Figure 2, the above

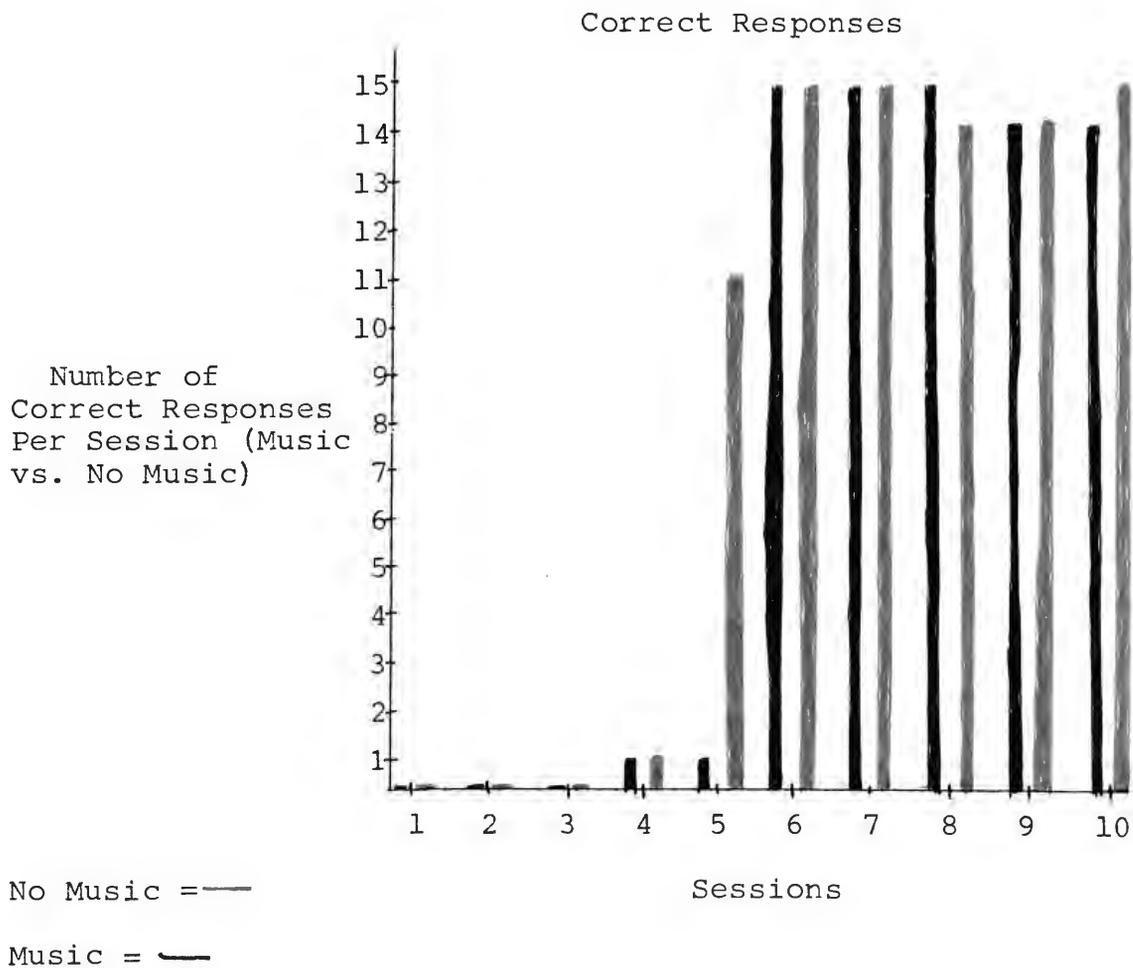


Figure 2

observations may also be made concerning the number of correct responses in each session. The subject seemed to perform equally well under music and no music conditions. These results did not warrant the need for any statistical analysis.

CHAPTER V.

DISCUSSION AND CONCLUSION

Discussion

This study was conducted to explore the use of music in a paired-associate learning task of a retarded subject. The purpose was to determine whether or not there would be a difference in the subject's learning when music was added as a cue to the task as opposed to no music.

There was no apparent difference in results between the music vs. no music paired-associate tasks. This could be due to the subject's already learned "system" of pairing photographs with names. Perhaps the subject's method of pairing did not need additional support, i.e., music cues/structure.

The music setting may have been a subtle reinforcer for the subject's learning, i.e., he expected every session to include music, so that he worked equally hard under music and no music conditions, and achieved equally well (note previous contact with the therapist in the pilot study). Possibly he learned more quantitatively and more quickly under music vs. a classroom or other setting. This idea was not tested in the study but warrants further research.

An interesting phenomenon was the subject's sudden success in session four. The subject might suddenly have understood the requirements of the task or perhaps he "turned on" to one familiar photograph which might have reminded him of someone he had known in the past. This is strictly speculation but suggests the need for further investigation.

The results of the study seem to imply that the use of music therapy would benefit Arthur in future learning sessions. Whether or not music is used as a cue, it would appear that the learning pattern of paired-associates, i.e., the association of unfamiliar with familiar, in this case, photos (familiar medium) with names (unfamiliar), worked well, and perhaps better in the music therapy setting than in other settings, although this would be subject for further research.

The main criticism of this study is that the two conditions of music and no music were used during the same session, although in different order each time. The whole session may have been perceived by the subject as "music therapy" and he functioned generally the same way under both procedures (conditions). A recommendation for future research would be to present the music procedure in one session and no music in another session.

Conclusion

The study confirmed the viability of the subject's method of learning. One would hope that this procedure is being employed today in other areas of his learning. The effects of music possibly increasing learning should be explored further in facilitating and increasing the subject's capacity to acquire new knowledge. The following quote sums up the feelings of the writer concerning the client/therapist relationship:

The patient/therapist relationship is in this writer's view, the generic basis for positive changes in psychotherapy. No matter what the nature of the pathology, patients are frightened and vulnerable...In the writer's view, the therapeutic relationship is a sufficient condition for positive change to occur (Naar, 1981, p. 26).

Thus, Arthur's paired-associate system of learning was at least enhanced and confirmed through his interaction with the music therapist and should be further exploited, possibly with music therapy and therapist becoming reward factors contingent upon his other learning progress.

APPENDICES

APPENDIX A

FICTITIOUS NAMES

Female

Sheila Oden
Violet Bunn
Priscilla Stevens
Lois Wade
Joanne Goode
Theresa Smith
Sonya Gamble
Kit Colburn
Darlene Snider
Cheryl Crump
Diane Baker
Elsie Buford
Alice Beer
Mary Justice

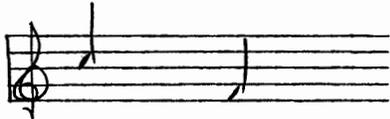
Male

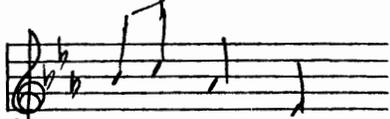
Paul Brasfield
Randy Clowdus
Walter Glaze
Pat Kaetz
Joe Thomas
Steve Parsons
David Nix
Richard Counts
Bill Greer
Kenneth Banks
Chuck Creel
Lester Lamons
Newton Peoples
Bill Claibourne
Mickey Hurst
Jim Waldrop

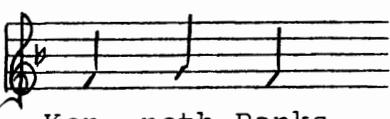
This list includes names used in both the Testing Phase I and II. The names used only in the Testing Phase II are shown in Appendix B.

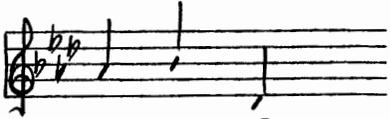
APPENDIX B

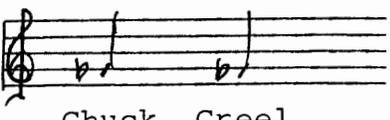
FIFTEEN MUSICAL CUES AND PAIRED NAMES

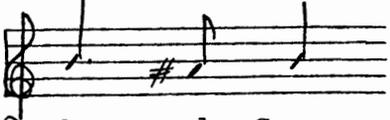
1. 
Bill Greer

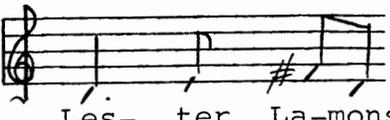
2. 
Vi-o- let Bunn

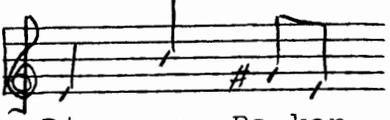
3. 
Ken- neth Banks

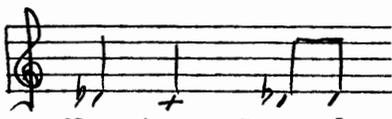
4. 
Lo- is Wade

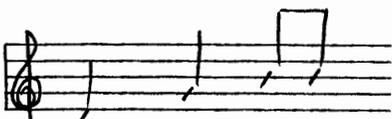
5. 
Chuck Creel

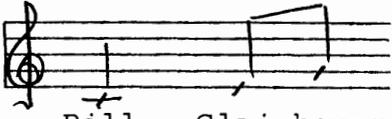
6. 
Che- ryl Crump

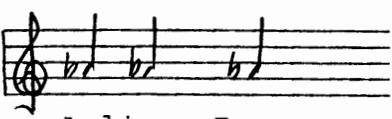
7. 
Les- ter La-mons

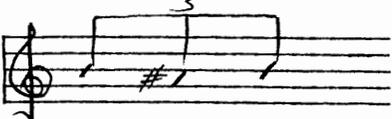
8. 
Di- ane Ba-ker

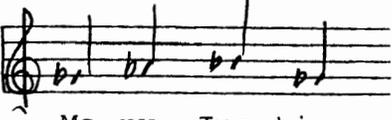
9. 
New-ton Peo-ples

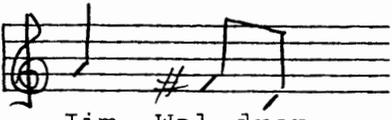
10. 
El- sie Bu-ford

11. 
Bill Clai-bourne

12. 
A-lice Beer

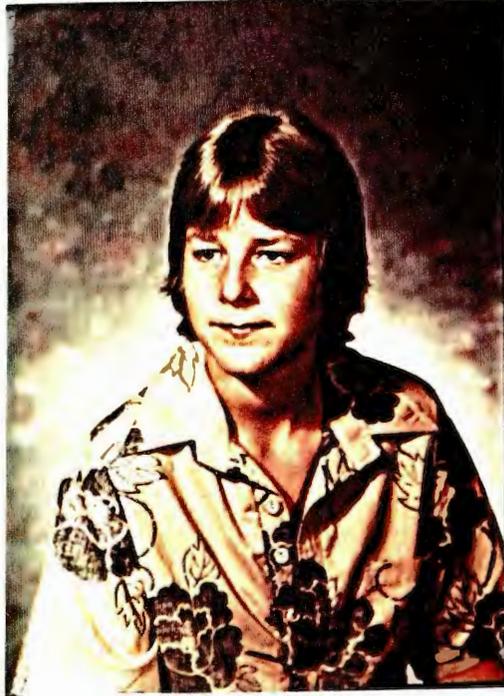
13. 
Mic-key Hurst

14. 
Ma-ry Jus-tice

15. 
Jim Wal-drop

APPENDIX C

EXAMPLE OF PHOTOGRAPHS USED IN TESTING



APPENDIX D

DATA RECORD SHEET

Session _____ Number of Correct Responses: _____

Music _____ No Music _____ Number of trials to criterion: _____

	<u>Names</u>	<u>Trials</u>	<u>Correct</u>
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____
5.	_____	_____	_____
6.	_____	_____	_____
7.	_____	_____	_____
8.	_____	_____	_____
9.	_____	_____	_____
10.	_____	_____	_____
11.	_____	_____	_____
12.	_____	_____	_____
13.	_____	_____	_____
14.	_____	_____	_____
15.	_____	_____	_____

APPENDIX E



Texas Department of Mental Health and Mental Retardation

March 18, 1982

Human Subjects Review Committee
Texas Woman's University
P.O. Box 23717, TWU Station
Denton, Texas 76204

Dear Dr. Hinson:

This is to certify that Susan Stewart Long is exempt from obtaining human subject consent from the guardian of the client involved in her study. I have received an oral description of the study and found the following criteria to be true:

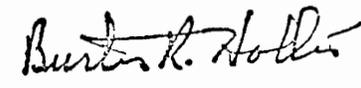
1. there is no potential for physical risk to the subject
2. there is no potential for psychological risk to the subject
3. the subject will remain anonymous in the final written report

I hereby give my consent for this study to begin immediately.

Sincerely yours,


Dr. J. G. Holt, Chairman
Research Committee

Approved by:


Burtis R. Hollis

s1

APPENDIX F

3-17-82

Susan,

_____ has been seen for audiological evaluation within the last year and presents normal hearing and normal middle ear function.


Robert D. Gathings, MA.
Audiologist, CCC/Sp-A

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