

A STUDY OF THE EFFECTS OF MODERN MUSIC  
ON OPERANT AGGRESSION IN DELINQUENT  
AND NON-DELINQUENT ADOLESCENTS

APPROVED:

*Sidney Hammett*  
Major Professor

*Jack R. Hayes*  
Minor Professor

*Luane Kingery*  
Dean of the School of Education

*Robert B. Toulson*  
Dean of the Graduate School

A STUDY OF THE EFFECTS OF MODERN MUSIC  
ON OPERANT AGGRESSION IN DELINQUENT  
AND NON-DELINQUENT ADOLESCENTS

THESIS

Presented to the Graduate Council of the  
North Texas State University in Partial  
Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

By

Gerald H. Stephenson, B.S.

Denton, Texas

August, 1966

TABLE OF CONTENTS

	Page
LIST OF TABLES . . . . .	iv
LIST OF ILLUSTRATIONS . . . . .	v
Chapter	
I. INTRODUCTION . . . . .	1
Preliminary Observations	
Definitions	
Aggression	
Musical Effect	
Musical Effect and Aggression	
Hypotheses	
Proposed Research	
II. EXPERIMENTAL PROCEDURES . . . . .	18
Equipment	
Procedure	
Experimental Design	
III. RESULTS . . . . .	27
Analysis of A-Scores	
Analysis of A-B Scores	
Summary	
IV. SUMMARY AND CONCLUSIONS . . . . .	40
Summary	
Conclusions	
BIBLIOGRAPHY . . . . .	48

## LIST OF TABLES

Tables	Page
I. Judges' Ratings of Musical Selections . . . . .	20
II. Selections Used in Experiment . . . . .	21
III. Intersex Means of First-Half Scores . . . . .	28
IV. Means of Delinquents and Non-Delinquents in First Half Scores . . . . .	29
V. Summary of Analysis of Variance of First- Half Scores . . . . .	29
VI. Means of High-Intensity (X) and Low- Intensity (C) Groups . . . . .	32
VII. Analysis of Variance of Differences Scores . .	33
VIII. Mean Differences Scores by Cells . . . . .	35
IX. <u>t</u> Table of Differences of Inter-Cell Variability . . . . .	36

LIST OF ILLUSTRATIONS

Figures	Page
1. Graph Showing Differences in Performances Between Groups Exposed to High- Intensity Music and Groups Exposed to Low-Intensity Music . . . . .	34

## CHAPTER I

### INTRODUCTION

Across the world come reports of individual and collective acts of aggression. In an age in which man has at his disposal the means of committing the ultimate aggression against himself, it behooves social and behavioral scientists to study human aggression - its antecedents and the means of its more constructive channelling.

#### Preliminary Observations

The present study was first conceived as the result of observations of the reactions to music of young people detained in the County Juvenile Home of Dallas, Texas. Over a period of time it was noted that when certain types of music (derivatives of "rock'n roll") were played over the public address system, the incidence of aggressive behavior seemed to increase: more cursing, door-kicking, temper tantrums, than at other times. When quiet music was played, the overall aggressiveness seemed less.

In an activity involving painting, a group of boys were painting forms or symbols suggested by music. A variety of musical forms was presented to the group on a tape prepared for this purpose. The boys worked with concentration and apparent enjoyment, until the theme from "Peter Gunn" began

to play. This music is rather blatant jazz with a strong beat. The task was interrupted, and a rash of competing behavior, much of it aggressive, ensued.

Were these observations due to mere coincidences? Is there a relationship between the types of music listened to and the level of aggressiveness? A review of the literature revealed a great deal of data on aggression, less on the effects of music. There was no clear-cut evidence for or against a hypothesis that music effects aggression. There was, however, sufficient indirect evidence from which to infer the plausibility of the hypothesis.

#### Definitions

In the interest of clarity the following definitions are presented.

Aggression.-- The specific concept of aggression as it is used in this study is behavior resulting in pain or injury to another person. Accidents resulting in pain or injury are not being considered, although they might be conceptualized as unconscious aggression under certain circumstances.

For the purpose of this study, aggression will be operationally defined as pressing switches which cause another person to receive electric shocks of varying intensities.

Musical Effect.-- Changes that occur in the organism due to listening to music. In this study musical effect will be operationally defined by the differences in the level of

electric shock administered before and after listening to the music.

Anger. -- Strong feelings of negative affect resulting from frustration, threat or attack. Anger may or may not be associated with aggression.

Hostility. -- A conditioned response of negative affect usually directed against another person. It is not synonymous with aggression.\*

Frustration. -- A blocking of goal-oriented behavior. It is generally considered to be antecedent to aggression, although other responses are possible, e.g., regression, sublimation and substitution.

Delinquent group. -- Male and female white adolescents, age 13 to 17 in detention at the Dallas County Juvenile Home.

Non-Delinquent Group. -- Male and female white adolescents age 13 to 17 drawn from a church school population.

Experimental group. -- Subjects exposed to music rated as "very exciting" by peer judges.

Control group. -- Subjects exposed to music rated as "very soothing" by peer judges.

---

\*The two behaviors, though often occurring together, may occur separately. For example, a person may be angered by his employer, but display no aggression toward him.



## Theories of Aggression

Freud paid little attention to aggression in his early research, "relegating aggression to a minor role, aggressive impulses becoming manifest only in relation to stages of psycho-sexual development," (4, p. 185). He later came to view aggression as ego-defensive reaction to frustration. As he began to promulgate the thanatos theory, aggression came to be viewed as an externalized death-impulse. The more moderate view has had greater influence on subsequent theory.

Adler considered aggression as primary-drive -- the drive to mastery (4, p. 191). It is common to consider a person aggressive who strives intensively to achieve his goals. However, this leads to confusion: is aggression the intensity of drive, or is it a reaction to frustration? Adler came to separate the two concepts.

Horney conceived aggression as one of several possible reactions to "basic anxiety," or the fear of isolation. One reacted to this anxiety by moving away from, moving toward, or moving against others. This theory is weak in that there is no way of predicting which direction will be chosen (4, p. 194).

### The Frustration-Aggression Hypothesis

In 1939, the Yale group headed by Dollard and Miller published Frustration and Aggression. In that book they attempted to draw psychoanalytical concepts of aggression

into the framework of behavioristic experimentalism. The hypothesis follows:

This study takes as its point of departure the assumption that aggression is always a consequence of frustration. More specifically the proposition is that the occurrence of aggressive behavior always presupposes the existence of frustration, and contrariwise, that the existence of frustration always leads to some form of aggression. (7, p. 1).

This position is obviously too extreme. Sears (13, p. 315) hedges the premise by stating that "neither Freud nor the authors of Frustration and Aggression suggested that aggression was the only response to frustration . . . regression, substitution, and sublimation, for example, are important alternatives."

Of late this hypothesis has come under increasing attack by theorists. In a recent study by Buss (3) frustration was the only variable which did not significantly influence the level of aggression. Buss points out that "when experimenters wish to elicit aggression in the laboratory, they rely more on attack (insult) than on frustration " (4, p. 29).

Kaufman (11) is highly critical of the frustration-aggression hypothesis. He points out that it has become so diluted that it serves no function in discriminating behavior which might be classified as aggressive.

It is not denied that frustration may be an antecedent of aggression. But that it is the only antecedent to aggression is subject to serious doubt.

### High-Magnitude Theory

Walters and his associates (2, 15, 19, 20) conceive of aggressiveness as more a matter of observer-labeling than a personality trait (2, p. 114). Walters and Brown (19) propose a "high-magnitude theory of aggression." They point out that "whereas a mild response may be regarded as non-aggressive, a topologically similar, but more intense, response may be judged to be aggressive," (p. 375), while frustration may increase the intensity of the response (p. 376); high intensity responses may be learned in a variety of situations and generalized to others.

Kaufman criticizes the definition of aggression which leaves out the variable of intentionality. Buss and others have intentionally left this variable out of their definitions (3, p. 2). But Kaufman points out that this makes the definitions terribly ambiguous (11, p. 313). He asserts that "no behavioral act as such can consistently be called aggression, unless inferences about intention or expectation regarding its outcome are made."

Aggression has been viewed as an innate drive, as a reaction to frustration, and as a high-magnitude response. The late emphasis on multiple antecedents to aggression may yield more valuable and creative research. An insistence on using intentionality in the definition is plausible, but ignores the possibility of unconscious motivation and generalized aggression.

For the purpose of this study emphasis will be placed on multiple antecedents to aggression. The measurement of intentionality was outside of the scope of the study, but it may be inferred from the design.

#### Musical Effect

The effects of music have been the basis of a number of studies. A major impetus for increased interest in this area has been by the relatively new field of music therapy. Certainly in the modern world there is a need for such research, in view of the pervasiveness of music in life.

In reality, very little research has been conducted with any degree of rigor in this area. To be considered will be studies of physiological changes measured in the presence of music, emotional changes, and operant behavioral changes.

#### Physiological Changes

Inferences about changes in the emotional state of the personality have long been inferred from changes in physiology. Wedenfeller, and Zunny (21) studied the effects of music on the galvanic skin response (GSR) and heart rate of eighteen depressive and eighteen schizophrenic patients. The subjects were exposed to two pieces, one "calming" and the other "exciting". There were significant changes in the expected directions in the GSR's but no significant changes in the heart rates.

A similar study was conducted by Robert Henkin (1), using college students as subjects. Prior to the measurement of GSR, the subjects were presented with selections which they rated according to preference. It was found that factors influencing musical preference were melody, rhythm, and orchestral color. Melody was the most important factor, followed by rhythm.

It was predicted that the GSR would be most influenced by selections with prominent melodic lines, and results confirmed this prediction.

The studies cited above suggest that there are significant changes in the emotional state of those listening to music. While this is a common subjective experience, objective measurement is difficult.

Girard (8, p. 109) suggests three ways in which music alters the affective state, reducing anger: (1) reduction of muscular tension, (2) arousing new and competitive emotional response, and (3) stimulating reflection and fantasy through which repressed feelings may be expressed.

One of the difficulties involved in the investigation of musical effect is the variety of emotional responses made by different persons to the same piece of music. Sopchack (14) attempted to study affective responses of sophomore students to a variety of musical stimuli. The students were required to rate a variety of pieces according to a list of emotional values. He found little agreement among the

students. He concluded that "emotional responses to music are the combined result of learning and/or projection, in addition to the music itself" (p. 14, 18).

Michael Wallach (18) explored the effects of jazz on sexual arousal in ninety-eight college women. The selections were rated from high to low in arousal stimulus. After each stimulus was presented, the subjects wrote stories in response to them. The stories were then rated as to motion, rhythm, peaking, penetration and symbolic sexual content.

In addition to the stories the Maudsley Personality Inventory, MA and SE scales and the Minnesota TSE Emotional Extraversion Scale were administered. It was found that high anxiety social introverts showed higher symbolic sexual arousal than high anxiety social extraverts. Among the low anxiety subjects this relationship was reversed.

#### Operant Behavior Changes

Several studies have investigated the effects of music on operant behavior. Heckel et al. (10) studied the effects of music on the rate of speech during group therapy. By counting words-per-minute it was found that music with fast tempo effected a twenty-two per cent increase in the speech rate, as compared with the speech rate while slow music was played.

Willard Kerr (12) cited twelve experiments in industrial production affected by music. His findings indicated

that music of "fast psychological tempo" yielded increase in output and net increase in production, but a decrease in quality control (increase in rejects).

#### Theories of Musical Effect

Three theoretical positions were found in the literature. Sutermeister (16) postulates a resonance of the rhythmical elements of music to the "rhythmic organization of the brain stem." Taylor and Paperte (17) propose a "sympathetic unison" of the "structural dynamics of music" and the "structural dynamics of the emotions". A third position, taken by Colbert (5) emphasizes the intellectual response to music. Rather than a sympathetic union, he postulates a narrowing of attention "similar to the psychological narrowing effect caused by central nervous system stimulation by strong emotions, and also by a number of pharmacological agents" (p. 425).

These positions seem to differ primarily in emphasis. The narrowing effect postulated by Colbert could be the result of dynamic resonant responses suggested by the other theorists. More research is needed to clarify these positions.

#### Summary

Music apparently has a variety of effects on different persons. There seems to be a general quickening of responses

when musical tempo is increased. Responses such as GSR are effected in characteristic ways. But higher processes are ambiguously influenced by musical stimuli. And there is need for additional research in this area.

There is much speculation and very little factual data on which to base theory. As an example of this speculative approach, Howard Hanson is cited (9, p. 313). After a theoretical discussion of rhythm in music, Hanson expresses the vague opinion that modern music of an irregular rhythm is in some (not clearly defined) way deleterious to the human mind and may contribute to juvenile delinquency.

In their review of the literature on the effects of music Taylor and Paperte (17, p. 251) state:

As a result of the positive claims of early researchers as to the potent effects of music on behavior, and the failure of the experimentalists, a general dilemma has arisen; music, particularly in a therapeutic situation has become over-credited, but under-studied.

The studies cited demonstrate a variety of changes in human behavior associated with music.

#### Musical Effect and Aggression

Although no single study was found which investigated the effects of music on aggressive behavior, it has been established that other factors (theoretically connectable with aggression are influenced by music. Furthermore, it has been demonstrated that frustration is not the only antecedent to aggression,



Bandura, Walters and their associates demonstrated that responses labelled as "aggressive" were subject to reinforcement and learning by imitation.

The Yale group expressed their awareness of the effects of reinforcement on aggression in a footnote referring to catharsis (7, p. 50). They state that

The repetition of a mode of release of aggressive drive may presumably produce learning of it. Throughout this hypothesis both role of temporal factors and the influence of learning present problems acutely in need of detailed solution.

Two studies demonstrate the effects of reinforcement on aggression (19, 21). In each case experimental groups were given reinforcements for making high-intensity (aggressive) responses. Each experimental group increased significantly in aggression.

Bandura and Walters (2) emphasized the role of modeling in learning social behavior. Presumably, a child reared in a home characterized by much overt aggression would learn to be more aggressive than one raised in a home with low aggression, all things being equal.

Two studies (1, 20) demonstrate the effects of modeling on aggression. In one, children were exposed to aggressive models, which they imitated. In subsequent frustrating situations they imitated the aggressive models (1). In the second (20) adults were shown a knife-fight movie. They increased significantly the level of shocks administered in a "learning experiment."

This study does not demonstrate a modeling effect in the strictest sense, since the response (pressing a shock switch) is topographically dissimilar to the aggressive model. An increase in drive-strength, rather than habit-strength, seems the more plausible explanation.

### Conclusions

It has been demonstrated that the expression of aggression is affected by a variety of measurable factors. It is therefore reasonable to hypothesize that the level of an aggressive response may be influenced by any number of conditions, including music.

As suggested, aggression can be conceptualized as a drive. In which case the aggressive drive-strength may vary with many conditions. It was shown that music of different types may influence changes in the GSR, rate of speech, factory production and erotic symbolism. It is therefore reasonable to predict that aggression will indeed vary with changes in musical stimulation.

### Hypotheses

The following five hypotheses were investigated in the present study.

- I. Subjects exposed to highly exciting music will exhibit significant increases in measured aggression.
- II. Subjects exposed to very soothing music will exhibit significant decreases in measured aggression.

III. Subjects from the delinquent group will exhibit significantly higher levels of aggression than subjects from the non-delinquent group.

IV. Male subjects exposed to male targets will exhibit significantly more aggression than male subjects exposed to female targets.

V. Female subjects will not significantly differ with respect to the sex of the target.

## CHAPTER BIBLIOGRAPHY

1. Bandura, Albert, Dorothea Ross and Sheila A. Ross, "Imitation of Film-Mediated Aggressive Models," Journal of Abnormal and Social Psychology, LXVI (January, 1963), 3-11.
2. Bandura, Albert, and Richard H. Walters, Social Learning and Personality Development, Chicago, Holt, Rinehart and Winston, Inc., 1963.
3. Buss, Arnold H., "Instrumentality of Aggression, Feedback, and Frustration as Determinants of Physical Aggression," Journal of Personality and Social Psychology, III (April, 1966), 153-163.
4. \_\_\_\_\_, The Psychology of Aggression, New York, John Wiley and Sons, 1961.
5. Colbert, John, "On the Musical Effect," Psychiatric Quarterly, XXXVII (Fall, 1963), 427-436.
6. Diserens, Charles M. and Harry Fine, A Psychology of Music, Cincinnati, College of Music, 1939.
7. Dollard, John, Neal E. Miller, Leonard W. Doob, O. H. Mowrer, Robert R. Sears, Frustration and Aggression, New Haven, Yale University Press, 1939.
8. Girard, James, "Moderating Anger With Music," in Edward Podolsky, editor, Music Therapy, New York Philosophical Library, 1954, 107-11.
9. Hanson, Howard, "Some Objective Studies of Rhythm in Music," in Edward Podolsky, editor, Music Therapy, New York, Philosophical Library, 1954, 305-313.
10. Henkin, Robert I., "The Prediction of Behavioral Response Patterns to Music," Journal of Psychology, XLIV (March, 1957), 111-127.
11. Kaufman, Harry, "Definitions and Methodology in the Study of Aggression," Psychological Bulletin, LXIV (November, 1965), 351-364.
12. Kerr, Willard A., Effects of Music on Factory Production, Stanford, Stanford University Press, 1945.

13. Sears, Robert R., "The Experimental Analysis of Psychoanalytic Phenomena," in J. McV. Hunt, Personality and the Behavior Disorders, New York, The Ronald Press Company, 1944.
14. Sopchack, Andrew L., Individual Differences in Responses to Different Types of Music, Psychological Monographs, LXIX, xi (1955).
15. Staples, Frederick R., and Richard H. Walters, "Influence of Positive Reinforcement of Aggression on Subjects Differing in Initial Aggression Level," Journal of Consulting Psychology, XXVIII (December, 1964), 547-552.
16. Sutermeister, H. M., "Psychosomatik des Musike lebens, Prolegomena zur Musiktherapie," Acta Psychotherapeutica et Psychosomatica, XII (Spring, 1964), 91-100.
17. Taylor, Irving A., and Frances Paperte, "Current Theory and Research in the Effects of Music on Human Behavior," Journal of Aesthetics and Art Criticism, XVII (March, 1958), 251-258.
18. Wallach, Michael, Personality Functions of Symbolic Sexual Arousal to Music, Psychological Monographs, LXXXIV (No. 7), 1960.
19. Walters, Richard H., and Murray Brown, "A Test of the High-Magnitude Theory of Aggression," Journal of Experimental Child Psychology, I (June, 1964), 376-387.
20. Walters, Richard H., and Edward Llewellyn Thomas, "Enhancement of Punitiveness by Visual and Audio-visual Displays," Canadian Journal of Psychology, XVII (May, 1963).
21. Wedenfeller, Edward W., and George H. Zunny, "Effects of Music Upon GSR of Depressives and Schizophrenics," Journal of Abnormal and Social Psychology, LXIV (May, 1963), 307-321.

## CHAPTER II

### EXPERIMENTAL PROCEDURES

The experiment described in this chapter was based on methodology derived from research by Buss (1, 2, 3, 4, 5) and by Walters, et al. (10). It was ostensibly a two-person learning experiment in which the dependent variable was actually the level of shock administered by the "teacher" to the "student". Electrical equipment for this experiment was modified from a design by Buss (6, pp. 46-51), and will be described below.

#### Equipment

The equipment was an "aggression machine", consisting of three electrically interconnected boxes, a Wollensak tape recorder, and stereophonic earphones.

The "aggression machine" consists of three boxes electrically interconnected. The "teacher's" box (Figure 1) measures approximately 11" x 26" x 10". The "student's" box (Figure 2) measures approximately 15" x 20" x 10". The "monitor" measures approximately 12" x 20" x 8". Each is equipped with a hinged face-cover, which serves as a screen when folded back on top of the box.

The teacher's box:--The panel of the teacher's box is divided into two sections. The right-hand section is labeled, "stimulus control panel". On it are found two pilot lamps marked "right" and "wrong". Below these are four switches and corresponding pilot lamps marked A, B, C, D. These switches control stimulus lamps on the student's box.

On the left-hand panel are the following: a "correct" switch and lamp, ten numbered "shock buttons", a power switch, two panel fuses, and one female "audio" jack.

The student's box:--The student's panel is made from a sheet of translucent white plastic. On it are arranged four "stimulus lights," below which is found a three-position (center-off) toggle switch. This switch controls the "response lights" on the teacher's box. A finger-electrode is connected to a jack in the panel face. A mercury switch below the table can disconnect the power to the electrode. The level of shock is indicated by rear-lighted numerals which flash on the panel.

The monitor panel:--This panel is faced with white plastic on which are arranged a series of pilot lamps corresponding to the "stimulus" switches, the "response" switches, the "correct" switches and the ten "shock" switches. In addition, a digital counter is located in the upper-right-hand corner. Two switches, labeled "circuit breakers" are

located on a narrow shelf at the base of the panel. These actually control the "right" and "wrong" lamps.

#### Procedure

The procedures for this experiment will be described programatically, beginning with selection of musical stimuli.

Selection of music. -- It was felt that popular music commonly heard on local radio stations would have the greatest appeal to the subjects in this study. And, since this music was heard most often by these subjects and their peers, inferences could be drawn more easily from the results.

A tape consisting of forty excerpts from various popular recordings was presented to a group of adolescents in the Dallas County Juvenile Home. The group consisted of ten boys and ten girls. These judges were asked to rate each selection on two scales: "like" or "dislike", "exciting" or "soothing".

The means and standard deviations of each rating are presented in Table I. Each dimension was rated on a five-point continuum. For the Excitement continuum "1" represented "very soothing", and "5" represented "very exciting". For the Attraction continuum "1" represented "strong like", and "5" represented "strong dislike".



TABLE I

## JUDGES' RATINGS OF MUSICAL SELECTIONS

Title	Excitement		Attraction	
	Mean	S.D.	Mean	S.D.
1. "Walkin"	2.9	1.071	3.0	1.026
2. "You Are My Only Love"	3.2	.894	3.05	.824
3. "Rhapsody in Blue"	2.9	1.586	2.9	1.302
4. "When the Saints . . ."	3.2	1.576	2.05	1.276
5. "Walkin' With Mr. Lee"	2.85	1.235	2.25	1.118
6. "The Continental"	2.9	1.518	3.7	1.220
7. "Tune Up"	3.4	1.273	2.15	1.040
8. "La Paloma"	2.7	1.197	3.40	1.273
9. "Sunday in Geneva"	2.7	1.765	3.6	1.046
10. "Peter Gunn"	3.3	1.720	1.033	1.041
11. "Blue Velvet"	2.05	1.146	2.05	1.191
12. "More"	2.75	1.446	1.9	1.203
13. "Ain't That The Truth"	3.25	1.482	2.3	1.593
14. "Liverpool Drive"	3.3	1.010	2.9	1.021
15. "The Moon was Yellow"	2.15	1.424	3.25	1.372
16. "You My Love"	2.55	1.098	3.1	1.209
17. "Fallout"	3.25	1.118	3.05	.993
18. "Tansey"	2.75	1.164	3.125	1.081
19. "Three To Get Ready"	3.1	.680	3.45	1.099
20. "Jack Parr Theme"	2.7	1.080	2.8	.905
21. "Song of the High Seas"	3.25	.879	3.3	1.081
22. "Night Train"	3.45	1.541	2.7	1.104
23. "Blueberry Hill"	2.9	1.356	3.05	1.337
24. "Jam Ditty"	3.3	.571	3.6	.940
25. "Way Beyond Today"	2.4	.995	2.1	1.334
26. "Take Five"	2.2	1.322	1.4	.754
27. "Talkin Bout That River"	3.05	1.762	2.4	1.729
28. "Ahorí Paga To Dono"	2.55	1.913	3.05	.863
29. "Desafinado"	3.05	1.432	2.9	1.289
30. "Chuck's Beat"	3.00	1.376	2.05	1.276
31. "Do the Boomerang"	3.05	1.637	1.35	1.844
32. "Moo Moo"	3.25	1.019	2.7	1.983
33. "Washington Square"	2.55	1.356	1.4	.597
34. "Dominique"	3.3	1.302	1.75	.964
35. "Our Love is Here"	2.75	1.209	2.35	1.226
36. "Bo's Beat"	3.5	1.235	2.35	1.182
37. "Submarine"	2.9	1.165	3.25	1.333
38. "Estrellita"	2.45	1.135	3.05	1.468
39. "Busted"	2.85	1.565	2.05	1.394
40. "Fly me to the Moon"	2.75	.966	2.55	2.1997

Choice of music for the experimental tape was based primarily on the excitement rating. The attraction rating was used in cases of very close ratings on the other scale. Those selections at the extremes of the continuum, which had the lowest S. D.'s were used. Table II presents these data.

TABLE II  
SELECTIONS USED IN EXPERIMENT

Title	Excitement		Attraction	
	Mean	S.D.	Mean	S.D.
Exciting - 9'17"				
1. "Jam-a-Ditty"	3.3	.571	3.6	.940
2. "Night Train"	3.45	1.541	2.7	1.104
3. "Tune Up"	3.4	1.273	2.15	1.040
4. "Bo's Beat"	3.5	1.235	2.35	1.182
Soothing - 11'39"				
1. "Take Five"	2.2	1.322	1.4	.729
2. "The Moon Was Yellow"	2.15	1.424	3.25	1.372
3. "Way Beyond Today"	2.4	.995	2.1	1.334
4. "Blue Velvet"	2.05	1.146	2.05	1.191

#### Subjects

The subjects were chosen at random from two populations, delinquent and non-delinquent, as defined on page 3. A table of randomized combinations of the variable groupings was set up. This table was followed as much as was possible, to assure the randomization of subjects by variables.

Two subjects at a time appeared to be tested. However, one of these, the "student" was really a confederate of the investigator. Hereafter, this person will be referred to as the "victim" or "target". The "teacher" in each case will be referred to as the "subject".

The two participants entered the experimental situation together. After a brief explanation of the task, they were each allowed to choose a card. Since both cards were identical, and the accomplice had been told in advance to be quiet, the subject raised his hand. This procedure (borrowed from Buss and Brock, 2) made it seem credible to the subject that his place in the experiment was chosen at random.

Explanation of the "learning experiment". -- Initially the subjects were told that they would participate in two experiments -- one dealing with music, and a second dealing with learning. After his "selection" the "teacher" was shown the equipment and instructed in its use.

The subject was instructed that the task of the "student" would be to learn that when any combinations of stimulus light including "A" were turned on, his correct response would be "left". When "A" was not on, the correct response would be "right". The equipment was wired by means of a relay, so that the response would automatically register "right" or "wrong" on the "teacher's" box.

When the victim made a correct response, the subject was to flash a "correct" light on the "student's" box. When

the victim made an error, the subject was to "punish" the victim by giving him an electric shock of the intensity of his choice.

To demonstrate the shock, the electrodes were placed on the subject's finger. Then shock switches 1, 2, 3, and 5 were thrown successively. The subject was assured that the subsequent levels grew more intense on the same order as those he experienced.

After the experiment was explained to the subject, the victim was brought in, and the experiment began.

Recording the responses. -- This was done by the accomplices in the church setting, by the investigator in the Juvenile Home setting. The response consisted of the shock level administered.

In the Juvenile Home setting the investigator made the "right" and "wrong" responses, by means of the switches in the "monitor" box, and recorded the responses. It was felt that it would not be wise to entrust the accomplices with this responsibility, due to their emotional and intellectual limitations.

This problem did not prevail in the non-delinquent group, so the accomplices were allowed to make "responses" and record data. A program of randomized responses was prepared for this purpose.

So far as the subject was concerned, the conditions were identical, since he was isolated from both the victim and the investigator. In both cases, the victims were instructed to moan or yell out when the shock level was higher than five.

#### Experimental Design

The basic experiment was set up on a test/retest paradigm, exposing the subject to the experimental music between tests. Rationale for the music was that the subject would fill out a questionnaire on it after the experiment. Fifteen shock scores were collected during the first half, and fifteen in the second.

The data were assembled in sixteen cells according to four dimensions: Subject sex (M or F), Target sex (m or f), Music class (X = Exciting, C = Soothing), and Social Group (D = Delinquent, N = Non-Delinquent).

The data were analyzed by two 2 x 2 x 2 analysis of variance designs (8). Excluding the music dimension, A scores (first half) were analyzed in the first design. (B scores and A-B scores were also analyzed, but do not contribute to the principle results of the experiment). Excluding the Target sex dimension, the differences (A-B) scores were analyzed in the second design.

The total number of subjects was ninety-six. (Ninety-nine were tested. But three were eliminated because of accidental invalidation of their scores.) There were six

subjects per cell, twelve per cell in the cell combinations indicated above.

The results of the analysis of the data will be presented in Chapter III.

## CHAPTER BIBLIOGRAPHY

1. Brock, Timothy C., and Arnold H. Buss, "Dissonance, Aggression, and the Evaluation of Pain," Journal of Abnormal and Social Psychology, LXV (January, 1962), 23-31.
2. \_\_\_\_\_, "Effects of Justification for Aggression and Communication with the Victim on Postaggression Dissonance," Journal of Abnormal and Social Psychology, LXVIII (October, 1964) 311-321.
3. \_\_\_\_\_, "Repression and Guilt in Relation to Aggression," Journal of Abnormal and Social Psychology, LXVI (January, 1963), 3-11.
4. Buss, Arnold H., "Instrumentality of Aggression, Feedback, and Frustration as Determinants of Physical Aggression," Journal of Personality and Social Psychology, III (April, 1966), 153-163.
5. \_\_\_\_\_, "Physical Aggression and Frustration," Journal of Abnormal and Social Psychology, LXVII (July, 1963), 1-7.
6. \_\_\_\_\_, The Psychology of Aggression, New York, John Wiley and Sons, 1961.
7. Edwards, Allen L., Statistical Methods for the Behavioral Sciences, New York, Rinehart & Company, Inc., New York, Rinehart & Company, Inc., 1960.
8. Lindquist, Everet Franklin, Design and Analysis of Experiments in Psychology and Education, Boston, Houghton-Mifflin Company, 1953.
9. Staples, Frederick R., and Richard H. Walters, "Influence of Positive Reinforcement of Aggression on Subjects Differing in Initial Aggression Level," Journal of Consulting Psychology, XXVIII (December, 1964), 547-552.
10. Walters, Richard H., and Edward Llewellyn Thomas, "Enhancement of Punitiveness by Visual and Audio-visual Displays," Canadian Journal of Psychology, XVII (May, 1963), 244-255.

## CHAPTER III

### RESULTS

In order to test the hypotheses of the experiment, the data were arrayed in two 2 x 2 x 2 analysis of variance designs. The results of these analyses are displayed in Tables 5 and 7. The data for the first analysis (Table 5) were obtained from the A (first half) scores. The data for the second analysis were obtained from the A-B (differences) scores.

#### Analysis of A-Scores

The A scores were used in the first analysis because they were uncontaminated by the music variables. Although the music variables were systematically balanced, the A scores were judged more representative of the performance of the subjects.

Three variables were distributed in this analysis: subject sex, target sex, and delinquent -- non-delinquent grouping. The means which represent the first two variables are presented in Table 3. The third is presented in Table 4.

It had been predicted that male subjects would exceed female subjects in aggression. The mean for male subjects was 64.853; the mean for females was 49.729.



TABLE III

INTERSEX MEANS OF FIRST HALF SCORES  
BY SUBJECTS AND TARGETS

Subjects	Targets	
	Male	Female
Male	75.874	53.832
Female	58.916	48.542

It had been predicted that male subjects would differ in aggression with respect to the sex of the targets, but that female subjects would not. As can be seen in Table III, male subjects differed 22.042 mean points between male and female targets; female subjects differed only 2.374 points with respect to target sex.

It had been predicted that delinquents would emit significantly more aggression than non-delinquents. The results were that there was a small and non-significant difference in the opposite direction (Table IV).

TABLE IV

MEANS OF DELINQUENTS AND NON-DELINQUENTS  
IN FIRST HALF

Delinquent . . . . .	55.479
Non-Delinquent . . . . .	59.083

The analysis of variance (Table V) produced two significant differences. The T variable had an F of 4.6539 at 1/88 df with a probability greater than .05. The S variable had an F of 8.6902 at 1/88 df with a probability of greater than .01.

TABLE V

SUMMARY OF ANALYSIS OF VARIANCE  
FIRST HALF SCORES

Source	df	MS	F
Target Sex (T)	1	3675.38000	4.6539*
Subject Sex (S)	1	5642.67000	8.6802**
Delinquent - Non-Delinquent (D)	1	1441.50000	1.2175
TXS	1	2223.36000	3.5202
TXD	1	5.03000	NS
SXD	1	88.16000	NS
TXSXD	1	30.39000	NS
Within	88	650.06079	
Total	95		

\*p $\leq$ .05  
\*\*p $\leq$ .01

These results are consistent with the predictions and with previous research in this area (e.g., 1, 2). It seems safe to generalize that males in our culture tend to aggress more than females and that males differ in intensity of aggression with respect to target sex, while females do not.

The results with respect to the delinquent - non-delinquent variable did not conform to the predictions of the experiment. It is noted that the non-delinquent group aggressed more than the delinquent group.

While there are not certain explanations for this fact, certain hypotheses are offered. In the first place, it may be that aggression is not a factor that highly correlates with delinquency. Redle and Wineman (6) point out that their observations indicate a primary ego-deficiency in the highly aggressive delinquent child. It is not the degree of aggressiveness per se, which sets him apart and at odds with society; But, rather it is the highly-impulsive aggressiveness, coupled with inadequate inner controls and faulty value systems. A child may display aggressive impulses in a variety of ways.

Secondly, a reality factor that may have entered the picture: The delinquent group was in detention. And the investigator was a group worker in the institution of their incarceration. Depressed scores might be quite expected under such circumstances. It is a common observation that a youngster in detention will behave in a manner of unusual

restraint and decorum, in sharp contrast to his "normal" mode of behavior.

Thirdly, and conversely, the non-delinquent group may have found this situation an ideal opportunity to release suppressed aggressive impulses in a socially-approved setting.

#### Analysis of A-B Scores

In order to examine the influence of the experimental music, differences (A-B) scores were obtained. In this way each subject's performance could be compared with his own previous performance. In effect, each subject was his own control group.

The difference scores were arranged in a 2 x 2 x 2 analysis of variance design. The dimensions in this design were Subject Sex, Music group and Delinquent-Non-Delinquent grouping. The results of the analysis of variance are displayed in Table VII.

In Table VI the performances by X and C groups are compared. During the first half (A) the mean for the X group was 56.583; the mean for the C group was 58.208. These means did not differ significantly. Thus no bias was introduced with respect to over-all aggression.

TABLE VI

MEANS OF HIGH-INTENSITY (X) AND LOW-  
INTENSITY (C) GROUPS

Sources	X	C
First Half	56.583	58.208
Differences Scores (B-A)	16.283	-1.50

The differences scores yielded a mean for the X group of 16.283 and a mean of -1.50 for the C group. A  $F$  of 6.823 was obtained from the differences between these groups. With 1/88 df this was significant beyond the .02 level of confidence (cf. Table VII). The differences in the performances of the two groups are represented by Figure 1. It can be seen that the first two groups paralleled each other in the first half. But in the second half the X group was significantly more aggressive than the C group.

TABLE VII

SUMMARY OF ANALYSIS OF VARIANCE  
DIFFERENCES SCORES

Sources	df	MS	F
Subject Sex (S)	1	1001.04170	3.9006
Music (M)	1	1751.04170	6.8230*
Delinquent-Non-Delin- quent (D)	1	975.37500	3.8006
S X M	1	126.04150	N.S.
S X D	1	852.04160	N.S.
M X D	1	7.04160	N.S.
S X M X D	1	3.37510	N.S.
Within	88	256.63637	
Total	95		

\*p-.02

No other significant differences were obtained in the analysis of variance. Both S and D differences were below the .05 level of confidence. And there was no significant interaction. Thus the music variable contributed the major portion of the variance.



The means of each cell in the analysis are displayed in Table VIII. These means were rotated. And a Fisher  $t$  was computed for each difference (4, pp. 246ff). The results are displayed in Table IX.

TABLE VIII

## MEAN DIFFERENCE SCORES BY CELLS

Cell	Mean
MCD . . . . .	- 1.75*
MCN . . . . .	+ 9.666
MXD . . . . .	+ 3.666
MXN . . . . .	+16.916
FCD . . . . .	- 5.666
FCN . . . . .	- 4.666
FXD . . . . .	+ 5.75
FXN . . . . .	+ 6.333

\*Sign indicates B-A

An examination of the results of this matrix shows that the primary interaction was between MXN and three of the C cells, MCN excepted. In these three interactions differences beyond the .01 level were obtained.



TABLE IX

t TABLE OF DIFFERENCES SHOWING INTER-CELL  
VARIABILITY

	MCD	MCN	MXD	MXN	FCD	FCN	FXD
MCN	1.7456***						
MXD	.8154	-.9301					
MXN	2.8414**	1.0958	2.0259*				
FCD	-.4841**	-2.2298*	-1.2996	-3.256**			
FCN	-.4459	-2.1916*	-1.2614	-3.2874**	.0382		
FXD	1.1467	-.5988	.3312	-1.6946	1.6309	1.5927	
FXN	1.2359	-.5096	.4204	-1.6054	1.7201	1.6819	.0891

\*p<.05

\*\*p<.01

\*\*\*Fisher's t.

An anomaly in these scores was the MCN scores. This cell yielded a mean increase of 9.666, second only to the 16.916 of the MXN cell. This cell interacted with cells PCD and PCN, yielding differences at the .05 level. With this exception, each cell moved in the expected direction.

Possible explanations for the anomaly in the MCN mean are suggested by the responses made to the music questionnaire. Testing the hypothesis that the boys disliked the music more than the girls, no difference was found. But it was discovered that the boys in the cell in question with only one exception were unable to tell how many selections they had listened to. On the other hand, eight out of the twelve girls had observed this.

This leads to the hypothesis that the boys did not attend to the music as much as the girls did. A further step would be the hypothesis that the degree of attention to and emotional involvement with the music determines the degree of musical effect, and therefore the degree of change in aggressiveness. These hypotheses will be discussed in Chapter Four.

#### Summary

The statistical analysis of the results of the experiment has yielded evidence that Hypotheses I, II, IV, and V were valid. Hypothesis III was not upheld.

Male subjects emitted more aggression than did females. Male subjects differed with respect to the sex of the target; females did not. No significant difference was obtained between delinquent and non-delinquent groups. And subjects differed significantly with respect to the music variable.

## CHAPTER BIBLIOGRAPHY

1. Buss, Arnold H., "Instrumentality of Aggression, Feedback and Frustration as Determinants of Physical Aggression," Journal of Personality and Social Psychology, III (April, 1966), 153-163.
2. \_\_\_\_\_, "Physical Aggression and Frustration", Journal of Abnormal and Social Psychology, LXVII (July, 1963), 1-7.
3. \_\_\_\_\_, The Psychology of Aggression, New York, John Wiley and Sons, 1961.
4. Edwards, Allen L., Statistical Methods for the Behavioral Sciences, New York, Rinehart & Company, Inc., 1960.
5. Lindquist, Everet Franklin, Design and Analysis of Experiments in Psychology and Education, Boston Houghton-Mifflin Company, 1953.
6. Redle, Fritz, and David Wineman, The Aggressive Child, Glencoe, The Free Press, 1964.

## CHAPTER IV

### SUMMARY AND CONCLUSIONS

The major hypothesis of this study was that exciting music would increase the level of aggression, whereas soothing music would decrease the level of aggression. This hypothesis was confirmed.

It will be noted that not every subject responded in this way. One whole cell differed strikingly from the prediction. Therefore, it was concluded that there were interactions which were not accounted for in this design. Additional research may be needed to follow up this lead.

Secondary hypothesis were as follows: (1) delinquents would exhibit significantly higher levels of aggression than non-delinquents; (2) males would exhibit significantly more aggression when exposed to male targets than males exposed to female targets; (3) females would not differ with respect to the sex of the target. The first of these hypothesis was rejected; the second and third were confirmed.

It may be concluded that, other things being equal, male subjects will tend to aggress more than female subjects. Furthermore, male subjects will tend to be less aggressive with females than with males. Females, however, will not differ with respect to the sex of the target.

The data obtained in this study indicated that there was no difference in the level of aggression between the delinquents and the non-delinquents. As has been repeatedly suggested, the concept of delinquency is a legal one, and does not represent a psychological type. This concept is reflected in the results of this study.

#### PROBLEMS

There were a number of problems of a practical and theoretical nature in the construction and execution of this study.

##### Musical Effect

Several problems concerned the selection of the music. The first was the question of the type of music to use. Non-vocal music was chosen to simplify the variable. However, this robs the music of an ingredient which may be very potent. This suggests the need for further research.

Secondly, it was decided to use peer-judges in the selection of the musical stimuli. Undoubtedly this introduced some unreliability into the selection. However, it was felt that the gain in assessing the responses to the music would outweigh the loss.

The third problem was related to the choice of samples. The variability among the selection-ratings was not as great

as could have been desired, thus potentially confounding the effects of the music. Since significant results were obtained, it is assumed that there was a sufficient difference between the types of music used.

A fourth problem was the duration of the musical stimulus. Approximately ten minutes of music were used in this study. It was initially felt that this length of time was necessary to insure a "take" of the musical effect. However, it may be that a shorter time interval would reduce fatigue and enhance the musical effect.

A fifth problem concerned the duration of the musical effect. Colbert (5) points out that the length of time that an individual will continue to be influenced by the musical stimulus after the music stops is brief. An examination of Figure 1 indicates that on the whole the C group tended to match the X group after about ten trials following musical exposure.

There is a final problem of interpretation. It is probable that subjects will continue in a generally increasing intensity of aggression, during an experiment such as the one described in this study. Obviously, the scores of the C group were depressed after the musical stimulation. May the increase of the X group be legitimately attributed to the high-intensity music?

An examination of Figure 1 shows that both groups were depressed after hearing the music, C considerably more than

X. However, the X group recovered much more quickly and maintained a higher output of aggression than the C group.

In certain cases there were marked changes in the aggression output following the music. In one case the subject, after hearing the X music, increased from 101 to 150. Although all the variables have not been accounted for, it appears fairly certain that some variability was associated with both kinds of music.

#### Intentionality

The problem of intentionality was raised in the Introduction. Kaufman (7), and Walters, et al. (2, 10, 11), argue for a cognitive approach to aggression, which includes intentionality to aggress. Although high-intensity responses may be interpreted as aggression, as Walters and Brown have pointed out (10), assaultiveness may not be primarily involved. To consistently label such responses as aggression would be to fail to consider the motivational aspects of the response.

Intentionality has not been assumed in the research described in this study. However, it may be inferred from the nature of the measure. If a subject wished to (and a number did), the shock could be a mere signal. Level one is quite painless. But to choose any value above three, knowing that it hurts, the subject must have intended to do something more than merely signal that the "response" was incorrect.



### Attention vs. Inattention

It was suggested on page 40 that the males did not attend to the music as much as the females. And that this difference in attention could have affected the degree of movement. It was observed that if subjects became very involved in the music, (patted their hands and feet, hummed, and sang), they tended to move in the predicted directions. If they did not show signs of involvement, they tended not to move.

This suggests an additional dimension for study at a future time: attention vs. inattention. Subjects in one group could be instructed to get as emotionally involved as they could with the music. In another group they could be instructed to be as objective as possible about the music. It is predicted that the first group would show greater movement than the latter.

### Habit or Drive?

In their study of the "modeling effect" due to witnessing violence in films, Walters and Thomas (11) seem to overlook the fact that the response being measured (pressing shock switches) was topographically dissimilar to the example on the screen. The level of aggression increased, to be sure. How is this to be interpreted?

Even more indirect is the effect of the musical stimulus in the present study. Surely this is not "Modeling" in

the strictest sense. It seems probable that the changes in aggressive output in these studies could best be interpreted in terms of change in aggressive drive. The response to the music could have the effect of raising or lowering an over-all level of neural excitement, which would raise or lower the level of aggressive drive.

#### Attitude Toward Target

One other problem suggests itself. If one aggresses toward another, his evaluation of the other should be at that time different from a period of non-aggression. There have been many vague speculations that music could effect a change in attitudes. It might be possible to test that hypothesis.

In a design similar to the one in this study a rating scale could be given to the subject immediately following the music. He would be asked to rate his partner in the experiment according to a number of variables from which could be inferred his attitude toward the partner in the study.

#### Conclusion

It was concluded that the major hypothesis of this study was upheld by the experimental results. It was also concluded that two of the secondary hypotheses were upheld: That there would be significant differences between male and

female subjects with respect to over-all aggression, and also with respect to target-sex. The hypothesis concerning differences between the delinquent and non-delinquent group was not upheld.

A number of problems were discussed. The matter of selection of music was discussed from several points of view. The problem of intentionality, the problem of attention and the problem of attitude toward target were discussed.

## CHAPTER BIBLIOGRAPHY

1. Bandura, Albert, and Richard H. Walters, Adolescent Aggression, New York, The Ronald Press, 1959.
2. \_\_\_\_\_, Social Learning and Personality Development, Chicago, Holt, Rinehart and Winston, Inc., 1963.
3. Berkowitz, Leonard, Aggression: A Social Psychological Analysis, New York, McGraw-Hill Book Company, Inc., 1962.
4. Guss, Arnold H., The Psychology of Aggression, New York, John Wiley and Sons, 1961.
5. Colbert, John, "On the Musical Effect," Psychiatric Quarterly, XXXVII (Fall, 1963), 427-436.
6. Feshbach, Seymour, "The Function of Aggression and the Regulation of Aggressive Drive," Psychological Review, LXXI (April, 1965), 257-272.
7. Kaufman, Harry, "Definitions and Methodology in the Study of Aggression," Psychological Bulletin, LXVII (November, 1963), 371-378.
8. Milgram, Stanley, "Behavioral Study of Obedience," Journal of Abnormal and Social Psychology, LXVII (November, 1963), 371-378.
9. Pepitone, Albert, Attraction and Hostility, New York, Atherton Press, 1964.
10. Walters, Richard D., and Edward Llewellyn Thomas, "Enhancement of Punitiveness by Visual and Audio-visual Displays," Canadian Journal of Psychology, XVII (May, 1963), 244-255.
11. Walters, Richard H., and Murray Brown, "A Test of the High-Magnitude Theory of Aggression," Journal of Experimental Child Psychology, I (June, 1964) 376-387.

## BIBLIOGRAPHY

### Books

- Bandura, Albert, and Richard H. Walters, Adolescent Aggression, New York, The Ronald Press, 1959.
- Bandura, Albert and Richard H. Walters, Social Learning and Personality Development, Chicago, Holt, Rinehart and Winston, Inc., 1964.
- Berkowitz, Leonard, Aggression: A Social Psychological Analysis, New York, McGraw-Hill Book Company, Inc. 1962.
- Buss, Arnold H., The Psychology of Aggression, New York, John Wiley and Sons, 1961.
- Diserens, Charles M. and Harry Fine, A Psychology of Music, Cincinnati, College of Music, 1939.
- Dollard, John, Neal E. Miller, Leonard W. Doob, O. H. Mowrer, Robert R. Sears, Frustration and Aggression, New Haven, Yale University Press, 1939.
- Edwards, Allen L., Statistical Methods for the Behavioral Sciences, New York, Rinehart & Company, Inc., 1960.
- Farnsworth, Paul R., The Social Psychology of Music, New York, The Dryden Press, 1958.
- Lindquist, Everet Franklin, Design and Analysis of Experiments in Psychology and Education, Boston, Houghton-Mifflin Company, 1953.
- Pepitone, Albert, Attraction and Hostility, New York, Atherton Press, 1964.
- Podolsky, Edward, editor, Music Therapy, New York, Philosophical Library, 1954.
- Redle, Fritz, and David Wineman, The Aggressive Child, Glencoe, The Free Press, 1957.
- Van De Wall, Willem, Music in Institutions, New York, Russell Sage Foundation, 1936.

## Monographs

- Kerr, Willard A., Effects of Music on Factory Production, Stanford, Stanford University Press, 1945.
- Sopchack, Andrew L., Individual Differences in Responses to Different Types of Music, Psychological Monographs, LXIX (No. 11), 1955.
- Wallach, Michael, Personality Functions of Symbolic Sexual Arousal to Music, Psychological Monographs, LXXIV (No. 7), 1960.

## Articles

- Bandura, Albert, Dorothea Ross, and Sheila A. Ross, "Imitation of Film-Mediated Aggressive Models," Journal of Abnormal and Social Psychology, LXVI (January, 1963), 3-11.
- Bender, Laretta, "Genesis of Hostility in Children," Psychoanalytic Review, L (November, 1963), 625-632.
- Berkowitz, Leonard, James A. Green, and Jacqueline R. Macaulay, "Hostility Catharsis and the Reduction of Emotional Tension," Psychiatry, XXV (January, 1962), 23-31.
- Brock, Timothy C., and Arnold H. Buss, "Dissonance, Aggression, and the Evaluation of Pain," Journal of Abnormal and Social Psychology, LXV (January, 1962), 23-31.
- \_\_\_\_\_, "Effects of Justification for Aggression and Communication with the Victim on Postaggression Dissonance," Journal of Abnormal and Social Psychology, LXVIII (October, 1964), 311-321.
- \_\_\_\_\_, "Repression and Guilt in Relation to Aggression," Journal of Abnormal and Social Psychology, LXVI (January, 1963), 3-11.
- Buss, Arnold H., "Physical Aggression and Frustration," Journal of Abnormal and Social Psychology, LXVII (July, 1963), 1-7.
- \_\_\_\_\_, "Instrumentality of Aggression and Frustration, and Feedback as Determinants of Physical Aggression," Journal of Personality and Social Psychology, III (April, 1966), 153-163.

- Colbert, John, "On the Musical Effect," Psychiatric Quarterly, XXXVII (Fall, 1963), 427-436.
- Feshbach, Seymour, "The Function of Aggression and the Regulation of Aggressive Drive," Psychological Review, LXXI (April, 1965), 257-272.
- Hampton, Peter J., "The Emotional Element in Music," Journal of General Psychology, XXXIII (March, 1945), 237-240.
- Heckel, R. V., L. L. Wiggins, and H. C. Salzberg, "The Effects of Musical Tempo in Varying Operant Speech Levels in Group Therapy," Journal of Clinical Psychology, XIX (March, 1963), 129.
- Henkin, Robert I., "The Prediction of Behavioral Response Patterns of Music," Journal of Psychology, XLIV (March, 1957), 111-127.
- Kaufman, Harry, "Definitions and Methodology in the Study of Aggression," Psychological Bulletin, LXIV (November, 1965), 351-364.
- McNulty, John A., and Richard H. Walters, "Emotional Arousal, Conflict and Susceptibility to Social Influence," Canadian Journal of Psychology, XVI (April, 1962), 211-220.
- Megargee, Edwin I., and Gerald A. Mendelsohn, "A Cross-Validation of Twelve MMPI Indices of Hostility and Control," Journal of Abnormal and Social Psychology, LXV (December, 1962), 431-438.
- Milgram, Stanley, "Behavioral Study of Obedience," Journal of Abnormal and Social Psychology, LXVII (November, 1963), 371-378.
- Murstein, Bernard I., "TAT Hostility and the Buss Hostility Scale," Perceptual and Motor Skills, XVI (December, 1963),
- 
- \_\_\_\_\_, Charlotte David, David Fisher, and Hans G. Furth, "The Scaling of the TAT for Hostility by a Variety of Scaling Methods," Journal of Consulting Psychology, XXV (December, 1961), 497-504.
- Staples, Frederick R., and Richard H. Walters, "Influence of Positive Reinforcement of Aggression on Subjects Differing in Initial Aggression Level," Journal of Consulting Psychology, XXVIII (December, 1964), 547-552.

- Sutermeister, H. M., "Psychosomatik De Musike lebens, Prolegomena zur Musiktherapie," Acta Psychotherapeutica et Psychosomatica, XII (Spring, 1964), 94-100.
- Taylor, Irving A., and Frances Paperte, "Current Theory and Research in the Effects of Music on Human Behavior," Journal of Aesthetics and Art Criticism, XVII, 1958, 251-258.
- Walters, Richard H., and Edward Llewellyn Thomas, "Enhancement of Punitiveness by Visual and Audiovisual Displays," Canadian Journal of Psychology, XVII (May, 1963), 244-255.
- Walters, Richard H., and Murray Brown, "A Test of the High-Magnitude Theory of Aggression," Journal of Experimental Child Psychology, I (June, 1964), 376-387.
- Wedenfeller, Edward W., and George H. Zunny, "Effects of Music Upon GSR of Depressives and Schizophrenics," Journal of Abnormal and Social Psychology, LXIV (April, 1962), 307-312.