THE INFLUENCE OF SET UPON MELODIC EXPECTANCY

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The Influence of Set upon Melodic Expectancy

by

Calvin Lee White

A dissertation submitted in partial fulfillment

of the requirements for the degree of

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Approved by James C Carlsen
(Chairperson of Supervisory Committee)

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to Offer Degree MUSIC

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DOCTORAL DISSERTATION

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Date March 14, 1983

UNIVERSITY OF WASHINGTON

Date: March 10, 1983

We have carefully read the dissertation entitled The Influence of Set Upon Melodic Expectancy submitted by Calvin Lee White in partial fulfillment of the requirements of the degree of Ph.D. and recommend its acceptance. In support of this recommendation we present the following joint statement of evaluation to be filed with the dissertation.

As a contribution to emerging knowledge of the role which expectancy plays in musical cognition, Calvin White has investigated a factor which in itself may influence our musical expectancies. In particular, Mr. White has reexamined the theory that set can alter one's expectancies. Results from an earlier study appear to suggest that set for a particular style of music was extremely difficult to obtain.

Mr. White has used an alternative means for establishing set which directly involves the subject in the music itself, rather than only listening passively. While the data reported in this dissertation only partially support his hypothesis, they do provide the basis for another hypothesis which would appear more adequate to test the basic theory. In so doing, Mr. White also provides an indication of what may constitute an effective setting procedure for musical studies.

Discriminant analysis techniques have not been used extensively in musical research. Doing so with the data in this study has enabled Mr. White to examine the contribution of several dependent measures to a profile of expectancy, a more powerful statistical technique than other non-parametric procedures used in earlier studies of expectancy in music.

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Abstract

The Influence of Set upon Melodic Expectancy

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Pember (1973) studied the effect of preparatory set on melodic expectancy, but because of methodological problems his results proved to be inconclusive. Additionally, the idea of testing certain target melodic beginnings for the influence of set had gone unexplored for the lack of a method of identifying which beginnings to target. Carlsen (1981) found the descending perfect octave to be the most ambiguous expectancy generator and Pember found this same beginning to be the only one, using his setting conditions, to produce different expectancies among three groups of participants. It was theorized that the influence of set on expectancy response patterns may vary inversely as a function of the expectancy generating strength of the melodic beginning.

Sixty college-level musicians were assigned in equal numbers to three groups in a randomized control-group posttest only design. Melodic expectancy profiles for 25 different two-tone melodic beginnings were established during Phase One of the research. The posttest taping sessions were preceded by 15-minute vocal warmup periods designed to evoke a preparatory set for participants in two of the

groups. Those in the Conjunct Group sang melodies featuring predominantly conjunct motion while the melodies sung by the participants in the Disjunct Group were largely disjunct. The controls had no warmup sessions prior to the posttest. Those melodic beginnings shown to be the strongest and weakest expectancy generators on Phase One were selected for discriminant analyses following the posttest to ascertain the effects of set.

The eight weak melodic beginnings tested showed some differences in responses between the Conjunct and Disjunct groups, but on only one beginning, the descending perfect fourth, was the difference significant and in a direction which supported the hypothesis. The six strong melodic beginnings targeted were found to be more resistant to set. Since several significant differences involved comparisons with the Control Group, it was suggested that an important inquiry would be the examination of setting vs. no-setting conditions rather than the differences produced by various sets. Research is also needed to determine what type of treatment best serves to establish a preparatory set in musical studies.

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CHAPTER I
THE PROBLEM

Musicians' reports of musical perception vary in their degree of perceptual error. As an example, two musicians may listen to an unfamiliar orchestral selection and be unable to agree on what instrument was featured on a particular solo passage. When pianists with similar training, experience, and technical abilities are asked to sight-read a piece of music, some might read flawlessly, while others misread a few or many notes. Or students in an ear training class may vary greatly in their ability to correctly notate a melody or rhythm which is played for them. Ortmann (1934) attempted to ascertain the causes of response errors by music students and concluded that in large part they could be attributed to inadequate reporting skill or insufficient exposure to the stimulus material. But as Pember (1973) asserts, all such response errors do not yield to these ready explanations as given by Ortmann. While some response errors are reducible through training, others persist, even after long contact with music and standard music notation practices. It is incumbent upon musicians to seek to identify the causes for discrepancy among perceptual reports. Only then can the questions dealing with human response to music be adequately addressed.

Review of Related Literature

Studies in psychology have shown that expectancy is one factor which can influence the ease of perception. As an example, a word which is expected, through whatever means, will be processed more readily than one which is unexpected. The latter requires greater perceptual analysis and therefore takes more time to be recognized. Solley and Murphy (1960) lend support to this idea when they assert that there is little doubt that the molar aspects of expectancy influence the selection of what is perceived. Bruner (1951) has set forth a three-part perceptual succession: 1) Preparation of the organism to expect a certain result given repeated stimulation, 2) an acquisition of information from the environment, and 3) a process whereby information received in step two is checked against what was anticipated as a result of step one. During this checking process of step three, the information is either confirmed, partially confirmed, or found to be incongruous. Bruner states that when expectancies are unfulfilled the perceiver may unknowingly substitute for the unexpected input that which he or she had expected. Gibson (1939), too, holds to the position that response errors will increase in direct proportion to the incongruity between an expected stimulus and the actual perceived stimulus. This same relationship may exist in the perception of aural phenomena, such as music. Carlsen, Divenyi, and Taylor (1970) have posited a theory that perceptual error in music is in part a function of expectancy.

Bruner and Postman (1949) showed participants five different playing cards tachistoscopically. From one to four of the cards were incongruous. That is, the color and suit were reversed, such as a red six of spades. Participants viewed the cards at successively longer durations until they could make two contiguous correct responses. They found that the recognition threshold for the incongruous playing cards was significantly higher than the threshold for "normal" cards. Bruner and Postman concluded that "perceptual organization is powerfully determined by expectations built upon past commerce with the environment" (p. 222). They asserted further that when well-established expectancies are not confirmed the organism may face a task of perceptual reorganization. Wertheimer (1938) also identifies past experience or habit as one factor which influences human perception. For example, if XY and Z (but not YZ) have become associated habitually, there is a tendency for the three letters to appear as XY/Z. Wertheimer states that arbitrarily arranged material can, after sufficient drill, be made habitual. The perception of incongruity in new material would presumably represent a violation of expectancy. Farnsworth (1926) demonstrated that experience and habit have an effect on expectancy when he found that preferences for various melodic endings could be permanently altered as a function of training. In his studies, an increasing familiarity with a particular melodic ending led to increasing preferences for that specific ending.

The idea that habit and past experience help to form expectancies which in turn influence our perceptions seems to have a direct application to musicians, particularly those whose training has centered almost exclusively on tonal music. Secondary dominant chords generally proceed to their temporary tonic. A melody which ascends stepwise from the fifth degree of a major scale to the seventh degree of that scale normally continues its upward climb to the tonic. With few exceptions, a dominant seventh chord at the conclusion of a musical work leads directly to the finality of a tonic chord. While musicians enjoy new information or novelty, at the same time they expect it to fit within a framework of regularity or pattern.[1]

Expectancy appears to operate beyond simple succession of a tone or chord, extending to patterns as well. Music is an art which is replete with patterns: melodic patterns, chord patterns, and rhythmic patterns. Jones (1978) defines a pattern as a nonrandom sequence of events which can be meaningfully extended, and later asserts that "an expectancy captures that private sense of anticipation experienced with an unfolding pattern" (1981, p. 39). The more often a pattern is encountered, the more familiar it becomes.

In research dealing with two types of stimulus patterns, Garner and Clement (1963) found that patterns perceived as stable, not easily changed, and having few alternatives were considered good patterns. Conversely, poor patterns were characterized by an opposite group of attributes. Given this fact, one would assume that musicians tend to expect musical patterns which they have encountered most frequently in their music experiences. They would classify tones of a melody or the chords as a progression as "good" or "poor" choices on the basis of familiarity, available alternatives, and stability. When confronted with unfamiliar musical patterns of any type, perceptual response might

[1]For excellent summaries on expectancy in music see Carlsen (1982) and Platt (1970, pp. 99-104).

vary from no response at all to an assortment of replies. On the other hand, frequently encountered patterns might produce strong expectancy response patterns because of a participant's familiarity with the stimulus. Music is a patterned art form and expectancy is intricately interwoven with our awareness of the future orientation of patterns. Expectancy, then, may play a large role in shaping the perceptual acuity of anyone involved in music, from the composer to the performer to the listener. In view of the possibly significant impact of expectancy on the perception of music, the study of music expectancy would seem to be a valid undertaking for the music researcher.

Carlsen (1981) obtained data which demonstrate that melodic expectancy does occur and that it varies as a function of the melodic beginning and the participant's cultural environment. There may be other factors which also affect one's melodic expectancies.

One influence might be the preparatory set of a participant at the onset of a particular collection of music perceptions. Does recent experience alter melodic expectancies in any way? If so, how is this manifested and of what use is the information? It is important to understand what factors contribute to expectancy so that when misperceptions occur they can be attributed to the proper source.

In an attempt to identify these potentially influential factors upon expectancy, Pember (1973) sought to establish a link between preparatory set and melodic expectancy. Of the 25 melodic beginnings he examined, only one (the descending perfect octave) showed an influence of the setting treatment. Pember offered the following explanations for the inconclusiveness of his findings: 1) With some participants vocal inadequacy (real or imagined) apparently inhibited expectancy responses, and 2) some melodic beginnings showed marked differences among treatments which proved not to be statistically significant because the data had to be pooled for analysis with Chi-Square.

A definition of terms is appropriate at this point. It is important to distinguish between the concepts of "set" and "expectancy". Some psychologists (such as Mowrer, 1938) have used these terms as though they were synonymous, while others generally refer to two distinct processes when they speak of set and expectancy. While the two concepts may appear to be similar because they are both oriented toward the future, the terms set and expectancy should not be used interchangeably.

Uznadze (1966) says that set is a state which results from the influence of objective stimuli which serve to prompt the participant in a certain direction because of the set's influence. Set can be further defined as a transient condition of an organism which facilitates certain types of responses or activities. This can be a subconscious process. Expectancy, on the other hand, can be thought of as an habituated consciousness in which the initial perception realizes a "set" or attitude (Pyle, 1909). Pyle states that there are two situations in which an expectant state can arise. In one case, a perception is experienced and the organism awaits another perception that in previous times has followed the first. On the other hand, there can come into consciousness perceptions which have not been experientially placed into a definite series. In this case, something might be expected, but one may not know what. In consciousness, these expectant states are characterized by strain, organic sensations, and sometimes verbal ideas. Expectancy then is an awareness with future orientation which is based upon past experience and habit. Lacking sufficient experience, the organism is aware that further perceptions will occur, but is unable to predict their nature with any degree of accuracy.

That set operates in the area of subconsciousness has been shown by Uznadze (1966), whose experiments focused on the haptic and visual modalities. Uznadze theorized that unfulfilled expectancies cannot account for all discrepancies in perceptual reports. After his participants were hypnotized, Uznadze had two balls of unequal size placed in their hands. This setting procedure was repeated numerous times. In these setting conditions, Uznadze's intent was to establish a set for inequality of size. Subsequently, in a conscious state, two balls of equal size were placed in the hands of each participant. In a judgment of the equality or inequality of the size of the balls, participants repeatedly concluded that the balls were unequal in size. Because the participants were hypnotized during the setting condition they were assumed to have had no expectancy of size. Therefore unfulfilled expectancy would not account for the report of inequality when the balls were actually equal in size. Uznadze concluded that the discrepancy in report was due to the setting condition, and that sets were effectual even when established in hypnotic states. According to

Uznadze, two conditions are needed for set: some demand must be placed on the participant, and a situation must be provided for its satisfaction. A set toward a definite activity will develop if both these conditions are present. Uznadze emphasizes that a line must be drawn between the set and the state of consciousness (expectancy) developing from it.

Uznadze is not alone in concluding that set is distinct from expectancy. Allport (1955) refers to set as a covert background state that is a subthreshold or lower level of the perception or act itself. Gibson (1941) describes preparatory set as the preparation (intention) to respond, and expectancy as the preparation for a stimulus. Hilgard and Humphreys (1938) established conditioned eyelid responses in their participants by presenting a visual stimulus followed by an air-puff to one cornea. Discriminatory conditioned eyelid responses were then developed by presenting another visual stimulus without reinforcement in random order with the previous stimulus, which was always reinforced. Participants were divided into groups and told to respond to certain stimuli and refrain from responding to other stimuli. Hilgard and Humphreys found that conditioning overrode efforts at voluntary restraint. That is to say, they found that responses differ when in addition to expectancy there is a set to react in a particular way. The results of the research conducted by Hilgard and Humphreys are further indication that expectancy is not to be confused with a deliberate readiness to respond (set) in a predetermined fashion. As early as 1909 Pyle conducted experimental research in the area of expectancy, after which he concluded that an "organism may be given a 'set' at the beginning of an experiment, a set that serves to bring up a certain group of associations and accordingly a definite expectant response, while this 'set' itself has no conscious concomitant or, at least, lies very low in the background" (pp. 558-559).

Since the concepts of set and expectancy have been dealt with as distinct entities in other perceptual studies, it seemed reasonable to conclude that they can have an individual, and yet related, application in the study of music perception as well. As an example, if preparatory set has in influence on musical expectancy, the expectancies of a patron attending the symphony might be influenced by the musical style he or she was attending to in transit to the concert hall. The setting condition in such a case would be the music heard just prior to arrival at the concert, and the expectancy would be the reaction to the orchestral selections. Assuming that the set was sufficiently strong to establish certain expectancies, congruence of style between the set and the actual performance would translate into a fulfillment of expectancy. Incongruence of style, on the other hand, between the set and the performance could be thought of as an unfulfilled expectancy. Or suppose a music student leaves his or her practice room and goes directly to an ear training class. If perceptual response in music is related to expectancies and past experience, it seems likely that one's expectancies in a situation such as this could be affected by the setting influence of the preceding time spent in individual practice. If this be true, then it could offer a possible explanation for differing degrees of perceptual error in music students' reports of musical perception.

In an effort to test their theory that perceptual error in music is a function of expectancy, Carlsen et al. (1970) developed procedures for the measurement of melodic expectancy. Subsequently, Pember (1973) theorized that preparatory set might be an influencing factor on one's melodic expectancies. He posited that perceptual errors could not be blamed entirely on unfulfilled expectancies without also accounting for the phenomenon of set. In an attempt to determine if melodic expectancy was influenced by set, Pember utilized short music excerpts representing three diverse musical styles to induce set. Following the presentation of each excerpt, participants were asked to sing the continuation of 25 interrupted two-tone melodic beginnings from within the octave: 12 ascending, 12 descending, and the unision. The resultant melodic expectancies were examined for the influence of set. The only melodic beginning to show a significant influence of set was the descending perfect octave ($p < .05$).

Carlsen (1981) found that expectancy generating strength varied among the melodic beginnings. Some beginnings elicited a particular third pitch greater than 40 percent of the time, while others failed to elicit one single response as often as 25 percent of the time. Carlsen found the descending perfect octave to be the weakest expectancy generator, producing eleven different responses at or above the chance level, with no response being given greater than 13.1 percent of the time.

Statement of the Problem

Given the fact that Pember's methodology raised doubts in two areas (the willingness of participants to give sung responses, and the statistical procedure employed), the influence of set on melodic expectancy is clearly an unanswered question. Furthermore, the idea of testing certain target melodic beginnings for the influence of set has gone unexplored for the lack of a method of identifying which beginnings to target. These factors contribute to our lack of understanding of the general relationship between expectancy and perceptual error in music, and therefore constitute a real and formidable query which needs to be addressed.

Research Theory and Hypothesis

One of Pember's recommendations (1973) was that perhaps specific melodic beginnings could be targeted for studying the influence of set on melodic expectancy. He felt that this might offset the loss of some power when certain melodic beginnings with low responses had to be pooled for his statistical analysis. He wondered, however, what criteria should be used for the a priori selection of target response beginnings. The findings of Carlsen (1981), when combined with those of Pember (1973), provide a possible answer for this question. The only melodic beginning to show a significant difference as a result of set in Pember's research was the descending perfect octave (-12). The fact that this same melodic beginning was found by Carlsen to be the weakest response generator suggests the possibility that the influence of set on expectancy response patterns may vary inversely as a function of the expectancy generating strength of the melodic beginning. Since the data-gathering procedure required sung continuations to two-note melodic beginnings, it was thought that the best way to evoke a particular preparatory set would be through the individual singing of a series of warmup melodies which were in the style of the desired set. It was hypothesized that melodic beginnings identified as weak expectancy generators would be influenced more by warmup melodies designed to evoke a particular set than melodic beginnings identified as strong expectancy generators. The purpose of this study was to test that hypothesis. The means employed are described in Chapter II.

CHAPTER II

METHODOLOGY

Experimental Design

The experimental design employed in this study is described by Campbell and Stanley (1963) as a Randomized Control-group Posttest-only Design. Recent studies examining the effects of set on perception have used designs and methodologies similar to those used in this study (see Jorgenson, 1978; Liu, 1976; and Ross, Spencer, Kozemchar & Vogel, 1977).

(R)	X_A	0
(R)	X_B	0
(R)		0

Figure 1. Experimental Design

Selection of Participants

Participation in the experiment was voluntary. All participants were undergraduate music students at Northwest College in Kirkland, Washington. A copy of the participant consent form is found in Appendix C. There were 34 males and 26 females in the study. The mean age of participants was 20.88 years. Over half the participants considered themselves primarily vocalists, according to a postexperimental survey. The amount of private instruction for all participants was a mean of 6.4 years and for group participation in music was a mean of 10.93 years. (More detailed demographic information on the participants in this research is given in Appendix G.)

Each person was told that his or her involvement would necessitate sung responses to a series of recorded melodic beginnings. All of the volunteers were agreeable to this mode of response. A screening test was used to ensure that each person could mentally conceive a melody and sing the melody accurately. The test consisted of playing the first few notes of a familiar melody, interrupting the melody for several seconds, and then signalling the person to sing the melody from the point it would have been had it continued without being interrupted. All students volunteering for the experiment met this criterion and were accepted for participation.

Preparation of the Data Collection Materials

Melodies used in the vocal warmup periods were four measures in length and were based on themes selected from A Dictionary of Opera and Song Themes (compiled by Barlow and Morgenstern, 1976). Fifty melodies, half featuring conjunct motion and half disjunct motion, were used in the warmups. Each melody began with one of the 25 two-tone melodic beginnings from within the octave: 12 ascending, 12 descending, and the unison. (Examples of five of these melodic beginnings which apparently occur infrequently in tonal music were not found in the dictionary. Consequently, representative melodies using these opening notes were written by the investigator.) Complete information on the warmup melodies is found in Appendixes A and B. In the 25 melodies chosen to typify the concept of conjunctness, 87 percent of the intervals were no greater than a whole step (excluding the opening two notes). On the other hand, 67 percent of the intervals in the

25 disjunct melodies (excluding the melodic beginning itself) were a minor third or wider.

The tapes used in this experiment were recorded from those developed by Carlsen (1981) for his earlier expectancy study. For this study, sets 1 to 5 and 11 to 15 were used. In those tapes the melodic beginnings consisted of the 25 two-tone intervals found within the equal tempered 12-tone octave. The pitches were generated by a square wave rolled off slightly in the upper register to approximate a clarinet timbre. The envelope was approximately 30 msec rise time, 500 msec steady state, and 75 msec decay. Each tone was sounded at the rate of one pitch per second. (For more details see Carlsen, 1981.)

Carlsen states that "each melodic beginning was introduced with a metronome signal which sounded two pulses (one per second) before the first pitch and continued for nine more pulses, thus serving not only as an indicator of tempo, but also as a signal for the beginning and ending of each item. Two to three seconds elapsed after the cessation of the metronomic pulses of one item before beginning again to introduce the next item" (1981, p. 14).

```
                                           2-3
              11 seconds                 seconds
    _____________________________     _______     _________
   | x  x  x  x  x  x  x  x  x  x  x ||        || x  x  x  x

   |_____||o__o||____________________||_______||_____||o__o
   Prepar- Stim-    Response Time      Silence   Prepar-Stim-
   ation   ulus                                  ation  ulus

       x = metronomic pulses          o = melodic beginnings
                   (from Carlsen, 1981, p. 15)
```

Figure 2. Data Collection Model

Ten sets of the 25 melodic beginnings were organized such that no two melodic beginnings would occur in the same succession in the ten sets. These ten sets were recorded on side one of two 60-minute cassette tapes (five sets per tape). The recorded sets included all four voice registers (soprano, alto, tenor, and bass), to accomodate male and female voices. Five different pitch levels were used within each of the registers in order to avoid establishing an unwanted relationship of a particular melodic beginning to only one key. In order to ensure the ease of singing actual expectancy responses, the second pitch of each melodic beginning always occurred at the midpoint of a participant's voice register. This facilitated the demonstration of either ascending or descending expectancies.

Experimental Groups

Because the hypothesis required the comparison of strong versus weak expectancy generators, two data collections were necessary. In Phase One of the experiment, expectancy responses were obtained from all 60 participants. Each participant sang continuations to five sets of the 25 melodic beginnings for a total of 125 responses in Phase One. To facilitate the decoding of response intervals during the data analysis, both the melodic beginning and the response were recorded. From these data for all sixty participants, the frequency of responses to each melodic beginning was tabulated to determine the general response tendencies for this sample of musicians on each of the melodic beginnings. Even though participants were permitted to sing a complete musical phrase for each melodic beginning, only the first sung pitch was analyzed. This was done because, as Carlsen points out, it is not certain whether further sung pitches would still be an expectancy response to the two-tone melodic beginning or a function of some other schema or pattern being conceived by the participant. After establishing a melodic expectancy profile for each melodic beginning, the data were examined to identify which melodic beginnings were strong expectancy generators (producing a single response a large part of the time), and which melodic beginnings were weak expectancy generators (failing to produce a single response a fair percentage of the time).

Prior to the posttest, each of the 60 participants was randomly assigned to one of three experimental groups. Melodic expectancy data were gathered during the posttest using the same procedures that had been used in Phase One of the study. However, in two of the groups the posttest sessions were preceded by individual vocal warmup periods for each of the participants. Each participant sang 25 four-measure melodies assisted by the investigator who played the melodies on the piano as the person sang. Each warmup session took approximately 12 to 15 minutes. The students in the study were told only that the purpose of the experiment was to assess the effects of a vocal warmup period on their melodic expectancies. In actuality, two different types of melodies were utilized in order to determine if they would serve to evoke a preparatory set in the participants. Each participant in the Conjunct Group warmed up by singing melodies replete with conjunct motion, while participants in the Disjunct Group warmed up on melodic patterns featuring disjunct motion. The third group served as a control and did not use a vocal warmup.

The two taping sessions (Phase One and posttest) for each participant took approximately 45 minutes and were separated by at least two days but not more than two weeks. All data were collected on the campus of Northwest College in Kirkland, Washington, between October 1 and December 4, 1981. The recordings of responses were made in a small room where the participant sat facing away from the sound equipment. The room was kept closed and participants wore headphones to reduce hearing ambient noise. The investigator left the room when the recording began and returned when the stimulus tape had finished. Equipment used in the data-gathering included a set of BP stereo headphones (Model SH-70A); a Shure dual impedance, unidirectional microphone (Model SM-58); and a pair of Pioneer two-channel stereo cassette decks (Model CT-F9191). All data were recorded on Maxell low-noise, C-60 cassette tapes.

Statistical Treatment

All data were gathered using the data collection model referred to in Figure 2. Phase One responses for all participants were examined to establish a melodic expectancy profile for each melodic beginning. Since only the first two intervals were pertinent to this investigation, only the first sung response for each melodic example was analyzed. On the posttest, the participants again sang continuations to all 25 melodic beginnings, and their responses to the strongest and weakest melodic beginnings (as indicated from Phase One data) were then examined for the influence of set. Discriminant analyses[2], one for each of the melodic beginnings which had been targeted, were performed on the posttest response data. These analyses were undertaken in order to reveal any significant differences between groups on the melodic beginnings in question. The significance level set for the study was alpha $\leq$ .05.

[2] Discriminant analysis is a technique whereby two or more groups are statistically distinguished by "a collection of discriminating variables that measure characteristics on which the groups are expected to differ" (Nie et al., 1975, p. 435).

CHAPTER III

DATA ANALYSIS

Reliability

To ensure the accuracy of the investigator in decoding the tape-recorded responses of the participants, the first set of responses from ten different participants was examined independently by another graduate student in Systematic Musicology whose data sheets were then compared to those of the investigator for those same participants. The responses from every fifth participant were selected for examination in this manner. There was agreement on 238 out of 250 responses, resulting in a high inter-rater reliability ($r = .952$, where r =agreements/ agreements + disagreements). On all twelve disagreements, the independent examiner's analysis differed from that of the investigator by just one semitone, and four of these were on participant responses which were ambiguous and difficult to label definitively.

Phase One Responses

All participants sang continuations to five sets of the 25 melodic beginnings on Phase One of the study. Responses were tabulated to determine the strength of the melodic beginnings. Table I lists each melodic beginning, its strongest response, and the percentage of times that response was given.

Table I

Melodic Expectancy Results (Phase One)

Melodic Beginning*	Strongest Response	Percent of Occurrence	Melodic Beginning*	Strongest Response	Percent of Occurrence
-12	0	26.0	1	2	33.3
-11	0	19.0	2	2	54.3
-10	0	21.0	3	2	22.6
-9	0	19.3	4	3	30.3
-8	8	18.6	5	0	21.6
-7	7	21.3	6	0	18.0
-6	6	18.3	7	0	19.3
-5	5	19.3	8	0	22.6
-4	2	20.6	9	0	20.3
-3	-2, 3	16.3	10	0	23.3
-2	-2	37.6	11	0	22.3
-1	-2	47.0	12	0	26.3
0	0	46.6			

*The number of the melodic beginning refers to the number of semitones in the interval. Descending intervals are represented by negative numbers.

As Table I indicates, the most frequently given response for 13 of the 25 melodic beginnings was a repetition of the second pitch of the beginning; 4 of the responses were a return to the first pitch of the pair. The eight exceptions to this were the four melodic beginnings clustered on either side of the unison: a descending minor second (-1) through a descending major third (-4), and an ascending minor second (1) through an ascending major third (4). The strongest expectancy generator was an ascending major second (2), yielding another ascending major second 54.3 percent of the time. The weakest expectancy generator was a descending minor third (-3), which yielded two different responses 16.3 percent of the time.

Carlsen (1981) identified strong expectancy generators as those which elicited a particular response 40 percent of the time or more and weak expectancy generators as those unable to elicit any one expectancy response as often as 25 percent of the time. As Table I indicates, only three melodic beginnings would qualify as strong generators using Carlsen's criteria. Since his criteria were somewhat arbitrary, a lower cut-off was adopted for these data in order to increase the sample size in a cell. For strong expectancy generators, the lower limit of 30 percent was chosen, and weak generators were those under 20 percent. Table II lists the melodic beginnings which met these criteria. Six melodic beginnings were classified as strong and eight were classified as weak.

Table II

Strong vs. Weak Expectancy Generators (Phase One)

STRONG Melodic Beginning	STRONG Response	STRONG Percent	WEAK Melodic Beginning	WEAK Response	WEAK Percent
2	(2)	54.3	-3	(-2, 3)	16.3
-1	(-2)	47.0	6	(0)	18.0
0	(0)	46.6	-6	(6)	18.3
-2	(-2)	37.6	-8	(8)	18.6
1	(2)	33.3	-11	(0)	19.0
4	(3)	30.3	-9	(0)	19.3
			-5	(5)	19.3
			7	(0)	19.3

Main Experiment

Posttest responses were examined and tabulated prior to performing a discriminant analysis on each of the targeted melodic beginnings. During the decoding process on the posttest data, the investigator noticed that four participants seemed to consistently respond out-of-range. Specifically, they gave responses which seemed an octave too low in view of the actual two-tone beginnings they heard. (These participants included one soprano and three tenors.) Subsequently, interviews were held with each of these participants privately to try to ascertain whether or not their actual responses were deliberate following certain of the melodic beginnings. One participant maintained strongly that the responses given were the ones intended. However, the other three felt sure that their intended responses were an octvave higher, and this was demonstrated to the investigator as they responded to several melodic beginnings which were played on a piano. Based on these meetings, responses for the latter three individuals which were considered questionable by the investigator were changed to the appropriate octave to reflect the intentions of the participants. A total of 171 of the 7,500 participant responses (2.3%) were implicated in the investigator's judgment. These changes were made in order to ensure, as much as possible, the validity of the response tabulations of the posttest data.

Following the posttest, only those responses occurring at least as often as chance (4% or more of the time) were selected for inclusion in the discriminant analyses. Two facts are evident from an examination of Tables III, IV, and V. On the posttest, participant responses to weak melodic beginnings in all three experimental groups were more diversified than they were to strong melodic beginnings. This was particularly true in the conjunct and disjunct groups. As an example, participants in the Conjunct Group gave ten responses at or above the chance level to the descending tritone (-6). The greatest number of responses this group gave on the strong melodic beginnings was six and that occurred following the unison (0) melodic beginning.

Table III -- Posttest Results (CONJUNCT Group)

Mel. Beg.	Strongest Responses and (%) of Occurrences									
	STRONG									
-2	-2(49)	-1(32)	2(10)	0(4)						
-1	-2(54)	-1(34)	1(6)							
0	2(33)	0(31)	-1(8)	1(7)	-2(5)	-5(4)				
1	1(44)	2(39)	-1(6)							
2	2(71)	1(12)	-2(6)	-10(4)						
4	-2(27)	3(24)	1(17)	0(14)	2(5)					
	WEAK									
-11	0(18)	2(15)	9(13)	11(13)	-1(9)	10(7)	4(5)			
-9	9(20)	7(16)	0(14)	2(13)	-3(8)	5(6)	-5(5)	8(5)		
-8	0(17)	8(13)	-4(10)	1(9)	6(9)	-2(8)	7(8)	-5(6)	2(4)	
-6	0(22)	6(18)	5(13)	2(10)	4(6)	-6(5)	3(5)	-4(4)	-1(4)	1(4)
-5	5(21)	2(20)	0(15)	-1(11)	-5(7)	3(7)	-7(5)	4(5)		
-3	-2(25)	2(16)	1(13)	-4(12)	0(12)	3(8)	-1(7)			
6	0(21)	1(13)	-1(12)	-2(8)	-3(7)	5(7)	2(6)	3(6)	4(5)	
7	0(18)	2(16)	5(16)	-3(12)	-2(11)	-1(9)	4(5)	1(4)		

Table IV -- Posttest Results (DISJUNCT Group)

Mel. Beg.	Strongest Responses and (%) of Occurrences									
					STRONG					
-2	-2(47)	-1(27)	2(13)	-3(4)	0(4)					
-1	-2(52)	1(22)	0(12)	-1(7)						
0	0(46)	2(15)	-1(10)	4(6)	-3(5)	-2(5)	1(4)			
1	2(45)	1(25)	0(15)	-1(9)						
2	2(66)	1(15)	0(7)	-2(6)						
4	3(46)	-2(16)	0(11)	1(10)	-4(5)					
					WEAK					
-11	1(22)	0(14)	2(14)	11(12)	9(11)	1(5)	7(5)			
-9	0(19)	9(16)	-1(12)	2(12)	7(8)	1(7)	5(7)	8(4)		
-8	-2(14)	0(14)	1(12)	2(9)	8(9)	3(8)	7(7)	6(6)	-4(4)	-1(4)
-6	1(18)	6(17)	-1(15)	0(13)	4(8)	5(8)	-3(6)	2(6)		
-5	-3(21)	2(19)	0(18)	5(13)	3(10)	4(6)	-2(4)			
-3	3(20)	2(19)	0(14)	-4(13)	-2(11)	1(9)	5(5)			
6	1(18)	0(17)	-6(11)	-3(11)	-4(10)	-1(10)	2(7)	-2(4)		
7	-3(19)	2(15)	0(14)	-2(13)	-7(12)	-1(7)	5(7)	-5(4)		

Table V -- Posttest Results (CONTROL Group)

Mel. Beg.	Strongest Responses and (%) of Occurrences								
					STRONG				
-2	-2(38)	-1(22)	2(20)	0(5)	3(5)				
-1	-2(46)	1(22)	-1(10)	0(9)	3(5)				
0	0(39)	2(19)	-2(12)	-5(7)	-1(5)	1(4)			
1	1(35)	2(30)	-1(16)	0(10)					
2	2(62)	1(11)	-2(10)	0(8)	-10(4)				
4	3(32)	-4(18)	0(18)	1(12)	-2(8)	-11(4)	2(4)		
					WEAK				
-11	0(31)	11(13)	-1(10)	10(6)	2(5)	5(4)			
-9	0(30)	9(15)	-3(8)	2(7)	8(7)	7(6)	5(5)	-5(4)	3(4)
-8	0(28)	8(15)	7(11)	1(9)	-4(8)	3(5)	-2(4)		
-6	0(27)	6(22)	5(9)	-2(6)	2(6)	4(6)	-6(5)		
-5	0(29)	5(25)	-2(9)	-7(7)	4(6)	-5(4)	-3(4)	3(4)	
-3	0(28)	3(28)	-2(16)	-4(11)	5(5)				
6	0(33)	-6(18)	1(8)	-2(6)	2(6)	6(6)	-5(4)		
7	0(34)	-7(18)	5(13)	-5(8)	2(8)	-2(5)	-12(4)		

The most often-given responses differed more on the weak melodic beginnings than on the strong melodic beginnings when paired comparisons between groups were made. That is to say, participants in all three groups tended to sing basically the same intervals as their strongest responses to the six strong melodic beginnings. However, this is not evident when group comparisons are made on the weak melodic beginnings. The Conjunct Group usually sang a unison with the second pitch of the beginning or returned to the first pitch they had heard. The Disjunct Group responded to the weak melodic beginnings in ways which have various melodic and harmonic implications. Participants in the Control Group most often simply sang a unison with the second pitch of the melodic beginning.

Whereas Tables III, IV, and V give a complete look at the posttest responses by group on each melodic beginning, Table VI provides a summary and permits closer scrutiny of the strongest responses for each of the fourteen targeted melodic beginnings by group. Several facts emerge upon examination of Table VI:

1) Consistent with the results in Phase One of the experiment, the ascending major second (2) was the strongest response generator in all three experimental groups, though the level of strength varied from 71 percent in the Conjunct Group to 62 percent in the Control Group.

2) While Phase One showed the descending minor third (-3) to be the weakest response generator, the descending minor sixth (-8) was the weakest response generator in both the Conjunct and Disjunct Groups on the posttest.

Table VI

Posttest Results
Strongest Responses on Each Melodic Beginning
(By Group)

CONJUNCT Group			DISJUNCT Group			CONTROL Group		
%	Melodic Begin.	Response	%	Melodic Begin.	Response	%	Melodic Begin.	Response
				STRONG				
71	2	2	66	2	2	62	2	2
54	-1	-2	52	-1	-2	46	-1	-2
49	-2	-2	47	-2	-2	39	0	0
44	1	1	46	0	0	38	-2	-2
33	0	2	46	4	3	35	1	1
27	4	-2	45	1	2	32	4	3
				WEAK				
25	-3	-2	22	-11	-1	34	7	0
22	-6	0	21	-5	-3	33	6	0
21	-5	5	20	-3	3	31	-11	0
21	6	0	19	-9	0	30	-9	0
20	-9	9	19	7	-3	29	-5	0
18	-11	0	18	-6	1	28	-8	0
18	7	0	18	6	1	28	-3	0
17	-8	0	14	-8	-2	27	-6	0

3) A division between strong and weak melodic beginnings consistent with that found in the data from Phase One was found again in the Conjunct and Disjunct Groups. However, in the Control Group two of the melodic beginnings classified as weak on the basis of Phase One responses, the ascending perfect fifth (7), and the ascending tritone (6), produced stronger responses than the ascending major third (4), which had previously been classified as a strong melodic beginning.

4) As shown earlier in Table II, in Phase One of the study, the strongest responses for all participants ranged from 54.3 percent (on the ascending major second) down to 16.3 percent (on the descending minor third). This represents a difference in percentage of 38 points. On the posttest, the strongest responses in the Conjunct Group ranged from 71 percent to 17 percent (a difference of 54); the strongest responses in the Disjunct Group ranged from 66 percent to 14 percent (a difference of 52); and the strongest responses in the Control Group ranged from 62 percent to 27 percent (a difference of only 35).

According to the major hypothesis, the posttest responses should have shown the six strong melodic beginnings to be resistant to the influence of the setting condition and the eight weak melodic beginnings to be influenced by the melodies sung by participants in the Conjunct and Disjunct Groups. Specifically, it was predicted that the Conjunct Group responses to the weak melodic beginnings would tend to be conjunct (a major second or smaller), and the Disjunct Group responses to the weak melodic beginnings would tend to be disjunct (a minor third or wider).

Considering the six strong melodic beginnings, it can be seen in Table VII that the percentages of conjunct versus disjunct responses from participants in the Conjunct and Disjunct Groups are very similar in all cases except one: the ascending major third (4). Consistent with the hypothesis, participants in both the Conjunct and Disjunct Groups responded similarly to the other five strong melodic beginnings. This might indicate a resistance to the setting condition for those melodic beginnings. The majority of responses to these same five melodic beginnings in Phase One of the experiment had also been conjunct (see Table VIII).

An examination of Table VII reveals that four of the weak melodic beginnings, the descending perfect fourth (-5), the descending minor third (-3), the ascending tritone (6), and the ascending perfect fifth (7), prompted participants in the Conjunct Group to respond in a conjunct manner a greater percentage of the time than participants in the Disjunct Group. As will be shown later, most of these differences among groups were not statistically significant according to the discriminant analyses. The descending minor third (-3) presents the strongest case for the hypothesis, with the Conjunct Group responding in a conjunct manner 73 percent of the time, and the Disjunct Group responding in a conjunct manner only 53 percent of the time. The results on the remaining four weak melodic beginnings (-11, -9, -8, -6) are anomalous in that the majority of responses in the Conjunct Group

Table VII

Conjunct vs. Disjunct Responses
Group by Melodic Beginning (Posttest)

STRONG				WEAK			
Melodic Begin.	Group*	Conjunct (%)	Disjunct (%)	Melodic Begin.	Group*	Conjunct (%)	Disjunct (%)
-2	I	95	0**	-11	I	42	38
	II	91	4		II	55	28
	III	85	5		III	46	23
-1	I	94	0	-9	I	27	60
	II	93	0		II	50	35
	III	87	5		III	37	49
0	I	84	4	-8	I	38	46
	II	80	11		II	53	34
	III	79	7		III	41	39
1	I	89	0	-6	I	40	51
	II	94	0		II	52	39
	III	91	0		III	39	42
2	I	89	4	-5	I	46	45
	II	94	0		II	41	50
	III	91	4		III	38	50
4	I	63	24	-3	I	73	20
	II	37	51		II	53	38
	III	42	54		III	44	44
				6	I	60	25
					II	56	32
					III	53	28
				7	I	58	33
					II	49	42
					III	47	43

* Group I - Conjunct
Group II - Disjunct
Group III - Control

** These data reflect only those responses which occurred as often as or greater than chance (.04).

Table VIII -- Phase One Results on Selected Melodic Beginnings

Mel. Beg.	Strongest Responses and (%) of Occurrences									
	STRONG									
-2	-2(38)	-1(19)	2(14)	0(8)						
-1	-2(47)	1(16)	-1(13)	0(5)						
0	0(47)	2(17)	-12(5)	-5(5)	-1(5)					
1	2(33)	1(26)	-1(16)	0(5)						
2	2(54)	1(12)	-2(11)	0(5)						
4	3(30)	1(14)	-4(13)	-2(13)	0(13)					
	WEAK									
-11	0(19)	11(15)	9(10)	-1(7)	2(7)	5(6)	7(6)	-5(5)	-2(5)	
-9	0(19)	9(15)	7(11)	-3(8)	-5(7)	2(7)	5(7)	-1(5)		
-8	8(19)	0(15)	1(11)	-4(9)	5(8)	-5(5)	-2(5)	-7(4)	2(4)	6(4)
-6	6(18)	0(17)	1(8)	5(8)	-6(6)	-5(5)	2(5)	4(5)	-1(4)	
-5	5(19)	0(19)	2(12)	-7(9)	-3(7)	3(7)	-2(6)	-5(5)		
-3	-2(16)	3(16)	0(16)	-4(11)	1(9)	2(8)				
6	-6(18)	0(18)	1(10)	3(10)	-4(6)	2(6)	-2(5)			
7	-7(19)	0(19)	2(14)	5(14)	-5(7)	-3(7)	-2(5)	-12(4)		

were disjunct, while the majority of responses in the Disjunct Group were conjunct. This unexpected finding will be addressed in Chapter IV.

Discriminant Analyses

A discriminant analysis among groups was performed on each of the fourteen targeted melodic beginnings. An examination of Table IX reveals that significant differences between the groups were found in expectancy response patterns on eight of the fourteen melodic beginnings tested. Five out of eight weak melodic beginnings varied among the groups, and three out of six strong melodic beginnings showed significant differences between the groups. The nature of the differences which occurred, and the relationship of the differences to the setting treatment will be subjects for discussion later in this paper.

Table IX

Discriminant Analyses Results Over All Three Groups

WEAK				STRONG			
Melodic Beginnings	df	F*	p	Melodic Beginnings	df	F*	p
-6	12, 104	2.64	.004	-1	6, 110	3.03	.008
-5	8, 108	3.48	.001	0	10, 106	1.97	.043
-3	6, 110	2.17	.051	4	6, 110	2.39	.033
6	12, 104	2.38	.009				
7	14, 102	2.75	.002				

* An approximate F value in Wilks Lambda

When examining the various melodic beginnings for significant differences on the discriminant analyses between pairs of groups, it can be seen in Table X that sixteen differences occurred: twelve on weak melodic beginnings and four on strong melodic beginnings. These facts are important because they have implications for the hypothesis of this study which stated that the expectancies generated by strong versus weak melodic beginnings would be influenced in the direction of a setting treatment in the Conjunct and Disjunct Groups. Since only half of the differences which occurred on the weak melodic beginnings were in a direction which supported the hypothesis, the differences may not be a function of the setting treatment. It should also be noted that of the sixteen differences listed in Table X, thirteen involved a comparison with the Control Group. Significant differences between the Conjunct and Disjunct Groups occurred on only three of the fourteen targeted melodic beginnings.

Table X

Melodic Beginnings Which Generated Significant Expectancy Differences ($p \leq .05$) Between Pairs of Experimental Groups

	Conjunct/Disjunct	Conjunct/Control	Disjunct/Control
WEAK	-6	-5	-11
	-5	-3	-9
		6	-6
		7	-5
			6
			7
STRONG	-1	-1	0
		4	
	(3 out of 14)	(6 out of 14)	(7 out of 14)

CHAPTER IV
DISCUSSION OF THE ANALYSIS

Comparisons with Previous Research

It was believed when this study began that the influence of set on melodic expectancy response patterns would vary inversely as a function of the expectancy generating strength of the melodic beginning. The data did not show overwhelming support for that theory. What now remains is to sort out the findings by analyzing the data and making comparisons with similar experiments.

Phase One of this research consisted of obtaining melodic expectancy responses from all sixty participants on the 25 two-tone melodic beginnings within the octave. Participants were instructed to sing the continuation of the melody they would have expected had the pitches proceeded beyond just the first two tones. The types of responses gathered from the sample during Phase One of the study were unexpected in light of previous research findings. As Table I shows, on 16 of the 25 melodic beginnings (excluding the unison), the most prominent responses were a repeat of the first pitch of the melodic beginning (four occurrences), or a repeat of the second pitch of the melodic beginning (twelve occurrences). These repeating responses are in contrast to Carlsen's data (1981), which showed that the greatest percentage of time the first pitch sung was different from either of the two pitches in the melodic beginning. The fact that so many Phase One responses were sung as a unison with the second pitch of the melodic beginning might be attributed to a misunderstanding of the procedural instructions for the research, but if this were the case, one would expect the phenomenon to be present in all 25 beginnings rather than just 12. It seems more likely that many of the two-note beginnings prompted no particular expectancy, and the recency of the stimulus just heard became a prompter for the response. Examination of the data revealed that the six melodic beginnings later classified as strong expectancy generators yielded responses that were generally consistent with those found by Carlsen (1981).

Three additional comparisons with Carlsen's findings are notable:

1) In order to have several melodic beginnings (strong and weak) for the posttest in this research, melodic beginnings which produced a given response ≥ 30 percent of the time on Phase One were classified as strong expectancy generators, and those which produced a single given response ≤ 20 percent of the time were classified as weak expectancy generators. Carlsen's data on the other hand suggested the use of 40 percent and 25 percent for these arbitrary classification points. This is indicative of the fact that the strongest response given by Carlsen's participants was generally given at a higher percentage level on most of the 25 melodic beginnings than the response given by participants in this study.

2) The range of strongest or most often-given responses in Phase One of this study, 54.3 percent for the strongest (2) down to 16.3 percent for the weakest (-3), was narrower than that found by Carlsen: 64.3 percent (2) down to 13.1 percent (-12). This difference becomes

even greater when one looks at Carlsen's participants from the USA, who showed a range of 74.5 percent to 11.9 percent. These differences suggest a dichotomy between the musical backgrounds of participants in the two experiments. The responses in this research were not as strong as anticipated on the more commonplace, conjunct melodic beginnings, nor as weak as expected on the more disjunct melodic beginnings which are heard less frequently.

3) Both studies found the ascending major second (2) to be the strongest response generator. However, beyond that, there was little agreement on which beginnings are strong and which are weak. The one melodic beginning which seemed most incongruent was the descending major seventh (-11). Carlsen classified that beginning as strong, generating a descending minor second just under 40 percent of the time. The Phase One tabulations in this experiment prompted a classification of the descending major seventh (-11) as weak, generating as its strongest response a unison, which occurred 19 percent of the time. This is a marked disparity both in the type of response given and the percentage of occurrence of the strongest response. One would expect the descending major seventh (-11) to be followed by a descending minor second in most cases (assuming tonality) yet that response was only given 7 percent of the time on Phase One by the participants in this study. It may be that the participants in the current research were not as familiar with normal melodic patterns on melodic beginnings which were wider than a fourth or fifth.

The dissimilarity with Carlsen's results also might be explained by the diversity of experience, training and overall musicianship of the participants in the two studies. Carlsen's participants were all music majors enrolled in professional music schools. Such an educational environment assumes a great deal of music experience and implies a rigorous screening procedure for admission which would include written music tests and/or performance auditions. Participants in the present experiment were undergraduates at a small college who were enrolled in at least one music class. While they possessed music abilities and experiences commensurate with their educational setting, it would be fallacious to equate their musicianship with that of the participants in Carlsen's research.

Effects of the Setting Treatment

The posttest data are interesting in that a comparison of groups showed that the Disjunct Group (which sang disjunct melodies as warmups prior to the second taping) responded in ways that seem more musically plausible than the other two groups. That is, several of their frequently given responses have an implied melodic or harmonic basis. The strongest responses in the Conjunct and Control Groups for each melodic beginning resemble very closely the data on the strongest responses obtained from all participants during Phase One.

A check of the Post-Experimental Survey Forms showed that participants in the Disjunct Group had a higher mean age, more who considered themselves primarily vocalists, more music majors, and a higher number of mean years of private music instruction than the other two groups.

A possible explanation then for the music plausibility of the Disjunct Group responses is that even though all participants in the study were randomly assigned to groups, those participants in the Disjunct Group by chance had more musical experience, and thus a greater store of expectancies on which to call in tasks such as these.

The ascending major second (2) was the strongest response generator in Phase One as well as in all three groups on the posttest. The strength of response on the posttest, however, was greater than it was on Phase One. The response on Phase One was another ascending major second 54.3 percent of the time. On the posttest, the numbers for the Conjunct and Disjunct Groups read 71 percent and 66 percent respectively. Assuming that Phase One responses were approximately equal among the groups, then the warmup melodies may have heightened the sense of conjunctness in members of the Conjunct and Disjunct Groups, with the greater increase being registered in the Conjunct Group whose warmup melodies primarily consisted of conjunct motion. However, this conclusion must be balanced by the fact that participants in the Control Group also showed more strength of response to the ascending major second (2) on the posttest. In that group, the response of another ascending major second was given 62 percent of the time.

Effects of the experimental treatment consistent with the hypothesis can be seen by examining the descending minor third (-3) on each group and comparing the data with Phase One responses for that same melodic beginning. Phase One responses for all participants showed the descending minor third (-3) to be the weakest response generator. Its most frequent responses were given only 16.3 percent of the time. Of the eight weak melodic beginnings examined on the posttest, the -3 ranked seventh in strength of response in the Control Group. That is to say, among participants in the group which sang no warmup melodies the descending minor third (-3) still ranked as a very weak melodic beginning on the posttest. The most often-given response by participants in the Control Group was a unison (28 percent of the time). The Disjunct Group, however, showed the descending minor third (-3), to be a stronger response generator on the posttest than five other melodic beginnings, and the most often-given response was an ascending minor third. This disjunct response is consistent with the warmup melodies sung by this group which were designed to elicit disjunct responses to weak melodic beginnings. Additionally, participants in the Conjunct Group responded in such a way on the posttest as to make the descending minor third (-3) the strongest response generator among those eight melodic beginnings which had been targeted as weak. The most typical response in the Conjunct Group was conjunct (a descending major second), and was given 25 percent of the time. Since the descending minor third (-3) was the weakest melodic beginning on the basis of Phase One data, it is not surprising that it exhibited effects of the setting treatment on the posttest. However, the fact that other weak melodic beginnings did not show the same effects limits the value of the descending minor third (-3) as support for this hypothesis.

On Phase One, there was a difference of 38 percentage points between the strongest response generator (54.3 percent) and the weakest response generator (16.3 percent). On the posttest, the Control Group showed a difference of 35 percentage points between the strongest and weakest response generators. This is not unlike the overall Phase One results. The Conjunct Group showed a margin of 54 percentage points and the Disjunct Group a margin of 52 percentage points separating the strongest and weakest response generators. It seems that by singing the warmup melodies, whether predominantly conjunct or disjunct, strong response generators were strengthened even more. Four of the six strong melodic beginnings (the 2, -1, -2, and 1) were even stronger following the setting treatment in the Conjunct Group. All six strong melodic beginnings registered higher percentages for the most often-given responses in the Disjunct Group on the posttest. While some effect was noted in the weak melodic beginnings as mentioned earlier with the descending minor third (-3), the melodic beginnings classified as weak response generators on the basis of Phase One data remained weak in the Conjunct and Disjunct Groups on the posttest. The most often-given responses on the eight weak melodic beginnings ranged from 25 percent to 17 percent in the Conjunct Group and from 22 percent to 14 percent in the Disjunct Group. It can be said then that the warmup melodies used in the setting treatment did alter the expectancies of participants in the experimental groups, but not in the manner that had been predicted. The warmup melodies apparently had no systematic effect on the weak melodic beginnings in the direction of the setting treatment. The apparent effect of the warmup melodies was to reinforce expectancies to the melodic beginnings which had been labeled as strong expectancy generators.

It was hypothesized that strong response generators would be resistant to the influence of set. An examination of posttest responses for each group shows that there is a great deal of conformity between posttest responses and Phase One responses on the six melodic beginnings which were classified as strong expectancy generators. The primary posttest responses to these beginnings were conjunct, with the sole exception being an ascending minor third in response to an ascending major third (4) in two of the groups. This same response was prominent on Phase One, and the obvious harmonic implication in these cases is a major triad in root position. Participants, then, in all three groups still primarily gave conjunct responses on the posttest to the strong melodic beginnings, even though participants in the Disjunct Group had sung disjunct melodies as warmups. Failure to alter expectancies on the six strong response generators is consistent with the underlying theory of this research.

The hypothesis in this study predicted that weak response generators would be influenced by set. This can be tested by an examination of the posttest responses of the Conjunct and Disjunct Groups on the eight melodic beginnings classified as weak expectancy generators. If the hypothesis be true, and if the setting condition were effective, the Conjunct Group should show a propensity toward conjunct responses on these beginnings and the Disjunct Group a propensity toward disjunct responses. Of the eight weak melodic beginnings, the strongest responses in the Conjunct Group were conjunct on six beginnings and disjunct on two beginnings. In all cases except one, participants in the Conjunct Group responded either by singing a unison with the second pitch or returning to the first pitch of the melodic beginning. The results from the Disjunct Group were five conjunct responses and three disjunct responses. As can be seen in Table XI, several of the strongest responses given by participants in the Disjunct Group can be explained logically from either a melodic or harmonic standpoint.

Table XI

Strongest Posttest Responses by the Disjunct Group
(Weak Melodic Beginnings)

Melodic Beginning	Response	Rationale
-11	-1	completion of the octave
-5	-3	major triad, first inversion
-3	3	(not apparent)
-9	0	(not apparent)
7	-3	major triad, root position
-6	1	resolution of tritone
6	1	resolution of tritone
-8	-2	(not apparent)

Pember (1973) found that the only two-tone melodic beginning to show a significant influence of set was the descending perfect octave (-12), while Carlsen's research (1981) found this same melodic beginning to be the most ambiguous expectancy generator. These facts gave rise to the theory of this study, that the influence of set on melodic expectancy response patterns varies inversely as a function of the expectancy generating strength of the melodic beginning. Phase One results in this research showed the descending minor third (-3) to be the weakest response generator, yielding a single response only 16.3 percent of the time. Posttest comparisons of the Conjunct and Disjunct Groups on the descending minor third (-3) are given in Table XII. Only those responses occurring equal to or greater than chance (4%) were included in the computations.

Table XII

Posttest Comparison
Conjunct vs. Disjunct Groups
on the -3 Melodic Beginning

Melodic Beginning	Group	Responses: Conjunct	Responses: Disjunct
-3	Conjunct	73%	20%
	Disjunct	53%	38%

While this difference on the -3 was not shown to be statistically significant by the discriminant analysis, it is interesting to note that, consistent with the predictions of this research, what began as the weakest melodic beginning after Phase One showed increased strength of response on the posttest in the direction of the setting treatment, particularly in the Conjunct Group.

The only strong melodic beginning that failed to elicit primarily the same type of responses from both the Conjunct and Disjunct Groups as given in Phase One was the ascending major third (4). A comparison of the responses is given below:

Table XIII

Posttest Comparison
Conjunct vs. Disjunct Groups
on the 4 Melodic Beginning

Melodic Beginning	Group	Responses Conjunct	Responses Disjunct
4	Conjunct	63%	24%
	Disjunct	37%	51%

Since Phase One data showed that the strongest response to the ascending major third (4) was disjunct (an ascending minor third), it was expected that both the Conjunct and Disjunct Groups would respond in primarily a disjunct manner to this strong melodic beginning on the posttest. There are two possible explanations for this lack of conformity with the other five strong melodic beginnings.

First, the other strong response generators were all conjunct melodic beginnings: -2, -1, 0, 1, and 2. The fact that the ascending major third (4) is disjunct may account for the seeming influence of set on the posttest responses in the Conjunct Group for this melodic beginning. That is to say, this finding may suggest that the size, or width, of the tones in the melodic beginning bears a relationship to the influence of set on that expectancy generator.

Second, the ascending major third (4) was the weakest of the six two-tone melodic beginnings classified as strong expectancy generators, yielding one response (an ascending minor third) 30.3 percent of the time on Phase One. Because of its weakness in relation to the other strong melodic beginnings, the ascending major third (4) may have functioned as a weak melodic beginning following the setting treatment, at least insofar as the Conjunct Group was concerned. This would explain the emergence of primarily conjunct responses on the ascending major third (4) on the posttest in the Conjunct Group.

The fact that more weak melodic beginnings showed significant differences between groups than strong melodic beginnings offers further, but limited, support for the effect of the experimental treatment. Since there were eight melodic beginnings targeted as weak response generators, discriminant analyses, in which all possible pair comparisons were made between the three groups, produced a total of 24 comparisons of these weak melodic beginnings. Twelve of these comparisons yielded significant differences between two of the groups: two between Conjunct/Disjunct; four between Conjunct/Control; and six between Disjunct/Control (see Table X). On the other hand, of the eighteen pair comparisons on the strong response generators (there were six melodic beginnings classified as strong response generators) only four showed significant differences between two of the groups: one between Conjunct/Disjunct; two between Conjunct/Control; and one between Disjunct/Control.

Because thirteen of the sixteen differences that did occur involved a comparison with the Control Group, it appears that singing melodic patterns as a warmup prior to taking a measure of melodic expectancy has some influence upon one's responses. Consequently, it may be more valuable in future research to examine the differences between a setting versus a no-setting condition rather than looking for differences between two types of setting conditions.

What is not shown conclusively by the data is that singing a particular style of melodies as a warmup will bias one's expectancies toward that style on two-tone melodic beginnings which have been shown to be weak expectancy generators. That is to say, some differences in responses between groups that were shown to be significant on the discriminant analyses differed in ways other than those predicted in this study, or at least the differences cannot be attributed to the setting treatment (conjunct vs. disjunct warmup melodies). As an example, the Conjunct and Disjunct Groups were shown to differ on two of the weak melodic beginnings: the descending tritone (-6), and the descending perfect fourth (-5). As can be seen in Table XIV, however, the percentage of conjunct versus disjunct responses given by participants in these groups is different between the two melodic beginnings, and a departure from what was expected, particularly on the descending tritone (-6).

Table XIV
Posttest Comparison
Conjunct vs. Disjunct Groups
on the -6 and -5 Melodic Beginnings

Melodic Beginning	Group	Responses: Conjunct	Responses: Disjunct
-6	Conjunct	40%	51%
	Disjunct	52%	39%
-5	Conjunct	46%	45%
	Disjunct	41%	50%

Even when examining the data between the Disjunct and Control Groups it can be seen that three of the six differences which occurred on the weak melodic beginnings cannot be considered a function of the setting treatment since the Control Group gave a higher percentage of disjunct responses in those cases.

On the other hand, all of the four differences found between the Conjunct and Control Groups on the weak melodic beginnings were where participants in the Conjunct Group responded in a more conjunct manner on the posttest than members of the Control Group. Significant differences, however, did not surface on any descending melodic beginnings wider than a perfect fourth (-5). The experimental treatment, then, seems to have affected expectancies of the Conjunct Group selectively when compared with the controls, but not with the Disjunct Group. Further, the influence of set upon melodic expectancy is dependent upon the interval direction and size of the melodic beginning.

It is worth noting that the warmups sung by participants in the Conjunct and Disjunct Groups may have had an effect on the preparations of the participants to give expectancy responses. As observed earlier, and shown in Table I, the most frequent responses to melodic beginnings wider than a major third (±4) on Phase One were either a unison with the second pitch of the melodic beginning or a return to the first pitch of the melodic beginning. A re-examination of Tables III, IV, and V reveals that on the posttest only the Control Group continued that pattern, while the Conjunct and Disjunct Groups (particularly the latter) now utilized other patterns. Apparently the recency of the warmup melodies served to give participants in the Conjunct and Disjunct Groups musical ideas from which expectancies were generated whereas the members of the Control Group still seemed limited on the posttest to the confines of the stimulus tones for each melodic beginning.

Summary

The answer to the question posed by this research should be found in an examination of the Conjunct and Disjunct Groups on the posttest. The hypothesis predicted that differences of response patterns should occur on the melodic beginnings labeled as weak expectancy generators. In fact, of the eight weak melodic beginnings examined in a comparison of the Conjunct and Disjunct Groups, two were significantly different: the descending tritone (-6), and the descending perfect fourth (-5). The descending tritone, while representing a significant difference, was contradictory to the investigator's predictions. That is to say, more participants in the Disjunct Group responded in a conjunct manner to that melodic beginning than was found in the Conjunct Group. The only melodic beginning to offer statistical support for the hypothesis was the descending perfect fourth (-5). Responses to that two-tone melodic beginning differed between the Conjunct and Disjunct Groups and the difference was significant at the .02 level. As Table XV shows, the type of responses given to that melodic beginning indicates that the direction of difference is the same as that predicted by the hypothesis.

Table XV

Posttest Comparison
Conjunct vs. Disjunct Groups
on the -5 Melodic Beginning

Melodic Beginning	Group	Responses: Conjunct	Responses: Disjunct
-5	Conjunct	46%	45%
	Disjunct	41%	50%

One would expect to find one or two apparent significant differences for every 25 pair comparisons at an alpha of .05 strictly as a function of chance. Accordingly, since only one of the eight weak melodic beginnings showed a significant difference between the Conjunct and Disjunct Groups, it would be unwarranted to construe this as true support of the hypothesis. This one difference might well be attributed to chance.

From the standpoint of a simple frequency count of conjunct versus disjunct responses between the Conjunct and Disjunct Groups, an examination of Table XVI would lead one to believe that if significant differences between groups for these melodic beginnings occurred, the greatest difference would be on the 4, the -3 next, and then the -5. In actuality the statistical significances revealed through the discriminant analyses are given in Table XVII.

Table XVI

Posttest Comparison
Conjunct vs. Disjunct Groups
Selected Melodic Beginnings

Melodic Beginning	Group	Responses: Conjunct	Responses: Disjunct
-5	Conjunct	46%	45%
	Disjunct	41%	50%
-3	Conjunct	73%	20%
	Disjunct	53%	38%
4	Conjunct	63%	24%
	Disjunct	37%	51%

Table XVII

Statistical Significances Between the Conjunct and Disjunct Groups on Selected Melodic Beginnings

Melodic Beginning	p
-5	.02
-3	.24
4	.16

Significant difference ($p \leq .05$) is underlined.

Just as the presence of a significant difference may not mean an hypothesis confirmation, similarly a lack of significance may not necessarily disconfirm an hypothesis. While the descending minor third (-3) was not significantly different between the Conjunct and Disjunct Groups according to the discriminant analysis, it remains clear from Table XVI that response patterns did vary on that weak melodic beginning. The differences are in a direction which supports the hypothesis, and they seem meaningful in light of the fact that the descending minor third (-3) was the weakest expectancy generator of all 25 melodic beginnings on Phase One of the study.

CHAPTER V
SUMMARY AND IMPLICATIONS

Procedures

Sixty college-level musicians were assigned in equal numbers to three groups in a randomized control-group posttest only design. After screening each participant for his or her willingness to give a sung response to a melodic beginning and the ability to mentally conceive a melody, melodic expectancy profiles for 25 pairs of two-tone melodic beginnings were established during Phase One of the research.

In an attempt to study the influence of set upon melodic expectancy, the posttest taping sessions were preceded by 15-minute vocal warmup periods designed to evoke a preparatory set for participants in two of the groups. Those in the Conjunct Group sang melodies featuring predominantly conjunct motion while the melodies sung by the participants in the Disjunct Group were in large part disjunct. The members of the Control Group had no warmup sessions prior to the posttest. Those melodic beginnings shown to be the strongest and weakest expectancy generators on Phase One were selected for discriminant analyses following the posttest to ascertain the effects of set.

Results

Phase One testing revealed six strong melodic beginnings, which elicited a single response $\geq$30 percent of the time, and eight weak melodic beginnings which failed to elicit any single response at least 20 percent of the time. On the discriminant analyses of the posttest responses, significant differences occurred on sixteen of 42 pair comparisons (twelve on the weak melodic beginnings and four on the strong melodic beginnings). Thirteen of the sixteen significant differences involved a comparison with the Control Group. Six of the twelve differences on the weak melodic beginnings were in a direction which supported the hypothesis of this research.

As had been shown in previous studies, the ascending major second (2) was the strongest expectancy generator, both during Phase One and on the posttest. Its most often-given response was another ascending major second.

The setting treatment had some effects on the Conjunct and Disjunct Groups. If nothing else, the warmup melodies sung served to strengthen the responses to the six strong expectancy generators on the posttest.

The fact that strong expectancy generators are resistant to the influence of set was confirmed by the data gathered in this study. This is best seen in an examination of the Disjunct Group, whose most often-given responses to the six strong melodic beginnings were identical to the pooled responses of all participants on those same melodic beginnings on Phase One. These responses were conjunct in all cases except one, even though participants in the Disjunct Group sang melodies featuring primarily disjunct motion in their warmup sessions.

Findings failed to support the hypothesis that weak expectancy generators would be influenced by set to the point that posttest responses would reflect the type of melodic intervals sung in the vocal warmup sessions. That is to say, an examination of the posttest responses of the Conjunct and Disjunct Groups did not show significant differences on the eight weak melodic beginnings except in one case: the descending perfect fourth (-5). As explained in Chapter IV, this one significant difference could have been a function of chance. The melodic beginning which was shown to be the weakest expectancy generator on Phase One, the descending minor third (-3), yielded posttest responses which seemed in conformity with the hypothesis but the differences between the Conjunct and Disjunct Groups on that particular melodic beginning were not shown to be statistically significant ($p < .24$).

Implications

One point stands out among the data gathered in this study: the consistency of the ascending major second (2) as an expectancy generator. The most often-given response to this melodic beginning was another ascending major second. This parallels the findings of Carlsen (1981). After participation in the warmup sessions, those in the Conjunct and Disjunct Groups of this study were even more disposed to the response of an ascending major second, especially the participants in the Conjunct Group whose warmup melodies were primarily stepwise. Expectancy strength does vary as a function of the melodic beginning, and apparently some expectancies can be reinforced or strengthened through the use of warmup melodies. Given the strength of the response pattern to the ascending major second (2) among musicians, it is still plausible to theorize that expectancy, or its lack of fulfillment, influences perceptual report.

Of crucial importance to the results of this project was the evoking of certain sets in the participants of the Conjunct and Disjunct Groups. Those in the Conjunct Group were to have been prompted toward stepwise melodic responses by singing a series of warmup melodies designed to evoke the concept of conjunctness. Participants in the Disjunct Group sang melodies designed to evoke the concept of disjunctness. It was assumed that the warmup melodies would serve to evoke the aforementioned sets. Pember (1973) had his participants listen to examples of various musical styles in order to evoke set. He expressed doubts afterwards of the effectiveness of this method. It was decided in this study that by singing the melodies the participants would more likely be influenced by the appropriate concepts in question.

There could be several explanations for the lack of significant differences between the Conjunct and Disjunct Groups on the weak melodic beginnings following the setting treatment:

1) The participants in this experiment were musicians whose backgrounds and experiences were somewhat narrow. This may be why their responses on Phase One, and therefore the resultant melodic expectancy profiles, were quite different from those obtained by Carlsen (1981). The profiles gathered from this particular sample of musicians may be more representative of those one might obtain from a

sample of nonmusicians. (This will be addressed again later in the chapter.)

2) It is possible that the limited musical backgrounds of the participants in the experimental groups rendered the setting treatment ineffectual as well. This is particularly true of the Disjunct Group, whose response to the weak melodic beginnings on the posttest were indicative of the fact that the concept of disjunctness was not prompted as a result of the warmup sessions.

3) It could be that a vocal warmup is no more likely to evoke a preparatory set than listening was in Pember's study (1973). It is difficult to know whether or not any of the participants in this research responded in ways on the posttest which were directly attributable to the setting treatment. If, in fact, the setting treatment itself was ineffective, then the theory still has not been adequately tested and will not be until such a time as a method is developed which will ensure the establishment of set. Of necessity, this will be a major undertaking which will involve the exploration of various means of evoking set, such as listening, singing, playing an instrument, writing music notation, or simply reading music notation silently. Along with this, various time frames will need to be examined in order to ascertain the optimum number of exposures to the treatment and the length of each session.

4) The theory for this project was derived from facts emerging from two other experiments: Pember (1973) and Carlsen (1981). The fact that Pember found only the descending perfect octave (-12) to be

influenced by set and Carlsen found that same melodic beginning to be the most ambiguous expectancy generator led to the theory that weak expectancy generators are more susceptible to the influence of set than strong expectancy generators. While their two experiments used different samples of musicians, there was much similarity in the characteristics of their participants, particularly Pember's participants when compared with Carlsen's participants from the USA. The participants in the present study were musicians with vastly different backgrounds and ability levels than those used by Pember and Carlsen. It could be that the theory is valid for musicians, but that participants must possess similar characteristics and abilities as those used in the previous studies in order for its validity to be verified.

Recommendations

Musicians' reports of musical perception vary in their degree of perceptual error. A clear means of reducing such errors would be of great assistance to music educators given the responsibility of teaching classes in ear training. While it seems certain that varying expectancies contribute to varying reports of musical perception, it remains unclear what variables other than melodic beginning and cultural milieu influence one's expectancies. Certainly Carlsen (1981) found these to be influential on melodic expectancy, but what about the effects of experience and preparatory set? Pember studied the effect of style sets on melodic expectancy but certain procedures he followed gave cause for concern. This study sought to correct these procedural problems and test a new theory as well.

Carlsen's participants showed no differences in expectancies as a function of training level. That is to say, younger musicians in the early stages of their professional training responded in ways not unlike music majors who were enrolled in advanced professional music schools. Participants in the research of Pember (1973) and Carlsen (1981) were all musicians involved in music study at a reasonably advanced level. Participants in this investigation were all undergraduates, some of whom were not music majors, but who were enrolled in at least one music course at a small college. It is possible that the expectancies of his participants and the participants in this study varied as a result of differing backgrounds and experiences. Further study is needed to ascertain the nature of the differences in melodic expectancy among various experience levels. This could be done by conducting a longitudinal study which would periodically obtain measures of melodic expectancy from a group of participants as they progressed through different educational settings. A less time-consuming approach would be to gather cross-sectional melodic expectancy data from several types of participants: children, teenagers not involved in music study, and adult nonmusicians, along with teenagers studying music, and university-level music majors. If these categories were well-defined and carefully filled, the resultant information would be useful in that it might serve to answer some pertinent questions: Does melodic expectancy differ as a function of age, music ability, and training or experience?

Further research is needed to determine what constitutes the establishment of a set and the type of treatment that best serves this purpose in melodic expectancy research. Pember (1973) had his participants listen to three diverse musical styles in an attempt to evoke particular preparatory sets. The present study employed vocal warmup melodies to evoke one of two sets: conjunctness (stepwise melodic movement) or disjunctness (melodic movement featuring skips). The results in both cases lead to the possible conclusion that the setting treatments were ineffectual. It may be that a combination of listening and singing (or playing an instrument) over a more extended period of time would be necessary to adequately establish a set for melodic style. The development of a verifiable method of evoking a particular set would seem to be of prime importance before the undertaking of additional research in this area.

Posttest responses in the Conjunct Group differed significantly from those in the Control Group on six out of fourteen melodic beginnings, and between the Disjunct Group and the Control Group on seven out of fourteen melodic beginnings. The fact that most differences which occurred involved a comparison with the Control Group suggests that the setting treatment did alter expectancies of the participants, even if not in the manner predicted. This is an important finding. Pember's research (1973), which investigated the effects of three different style sets on three groups, made no provision for the examination of controls. What is suggested by data collected in the present experiment is that a more basic question than the effect of two or more different style sets among various groups needs to be addressed. Namely, do music students involved in a definite music activity have differing melodic expectancies from students not directly involved in music participation just prior to taking a measure of melodic expectancy? The data from this study suggest that they do. This is a theory which needs to be tested further.

In addition to investigating an expanded theory, this research attempted to resolve the problems encountered by Pember (1973) when he sought to establish a link between set and expectancy. None of the participants in this study expressed any aversion to the data-gathering procedures which demanded a sung response. Instead of subjecting all responses to a statistical analysis, only those melodic beginnings identified as either strong or weak expectancy generators were examined in the posttest discriminant analyses. However, the essential ingredient which seems to have been missing is participants who had enough varied musical experiences and abilities to ensure the effectiveness of the experimental treatment. Replication of this experiment with music majors in a university setting might well give more definitive results and shed further light on the influence of preparatory set upon melodic expectancy.

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APPENDIX A

SOURCE AND ORDERING OF WARMUP MELODIES

Melodic Beginning	Conjunct	Disjunct	Melodic Beginning	Conjunct	Disjunct
-12 (22)*	25-G**	25-P	1 (25)	27-Q	270-S
-11 (14)	***	***	2 (2)	2-C	173-P
-10 (10)	99-Q	***	3 (7)	199-K	198-D
-9 (19)	74-J	242-H	4 (6)	230-J	415-O
-8 (12)	30-E	400-H	5 (24)	75-H	82-N
-7 (17)	272-L	275-S	6 (1)	8-F	***
-6 (16)	130-D	60-D	7 (13)	153-S	363-P
-5 (5)	271-G	234-T	8 (23)	18-S	117-G
-4 (4)	24-K	55-G	9 (20)	95-O	344-H
-3 (18)	178-F	143-Q	10 (9)	15-S	114-C
-2 (3)	26-D	395-F	11 (21)	357-L	***
-1 (15)	385-E	221-M	12 (8)	408-F	225-O
0 (11)	26-E	36-H			

* The melodies were randomly ordered for presentation during the warmup sessions; numbers in parentheses indicate the order in which the 25 melodies were sung.

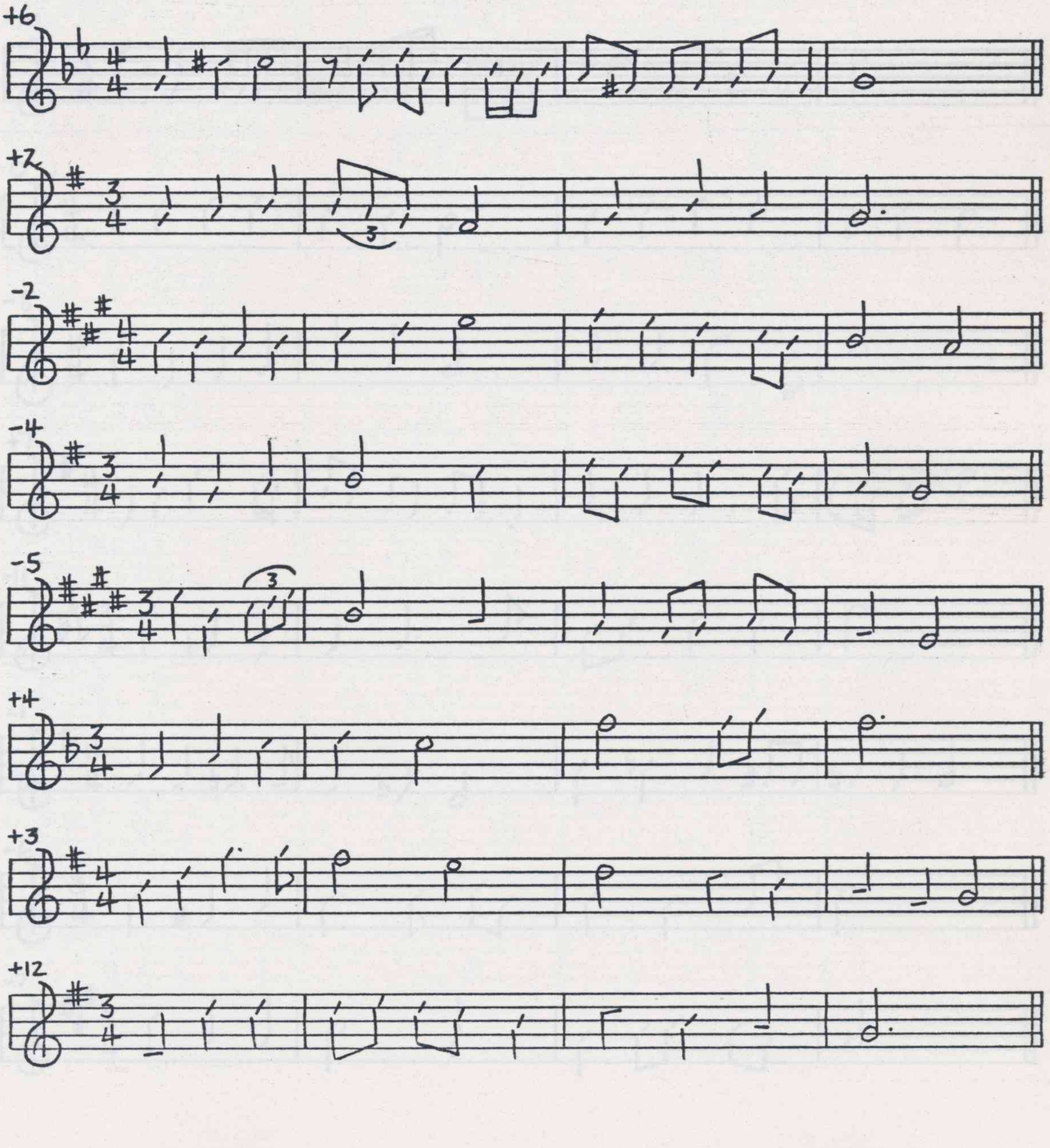
** Page number in <u>A Dictionary of Opera and Song Themes</u>, from which the melodies were taken.

*** Melody written by investigator

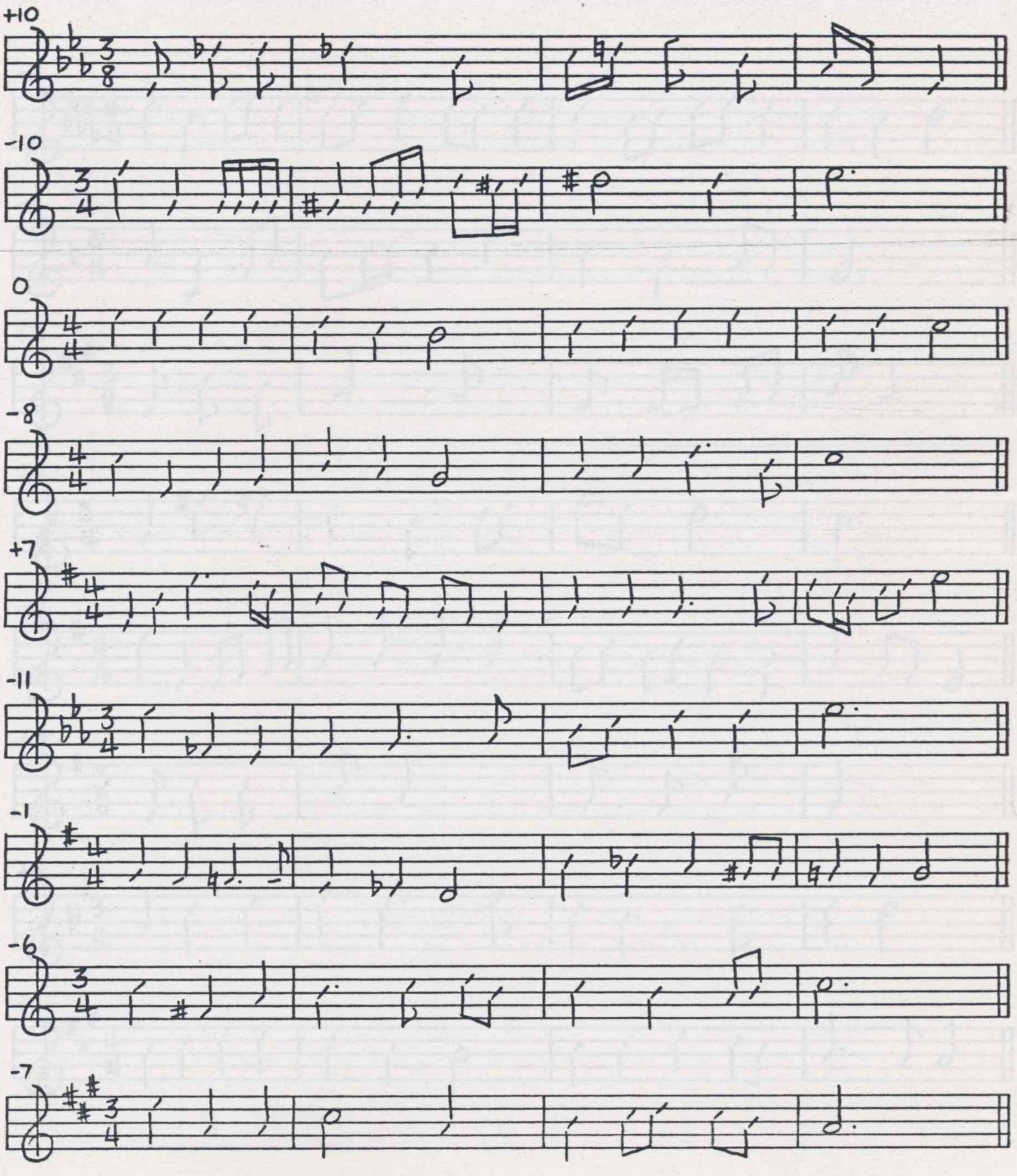
APPENDIX B

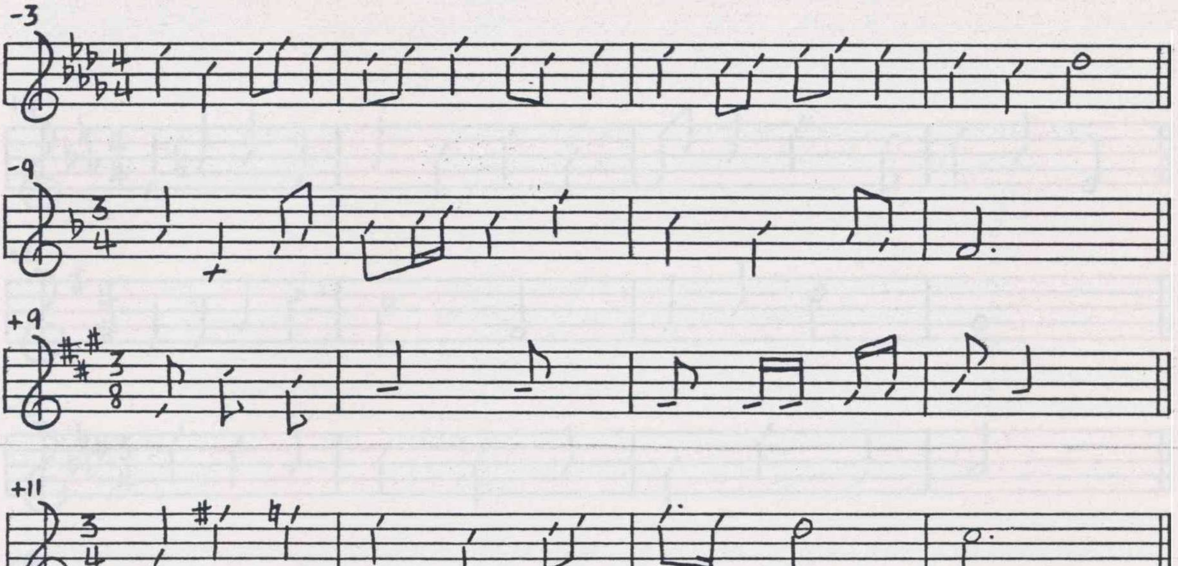
MELODIES USED IN EXPERIMENTAL TREATMENTS

<u>Conjunct -- Soprano</u>*

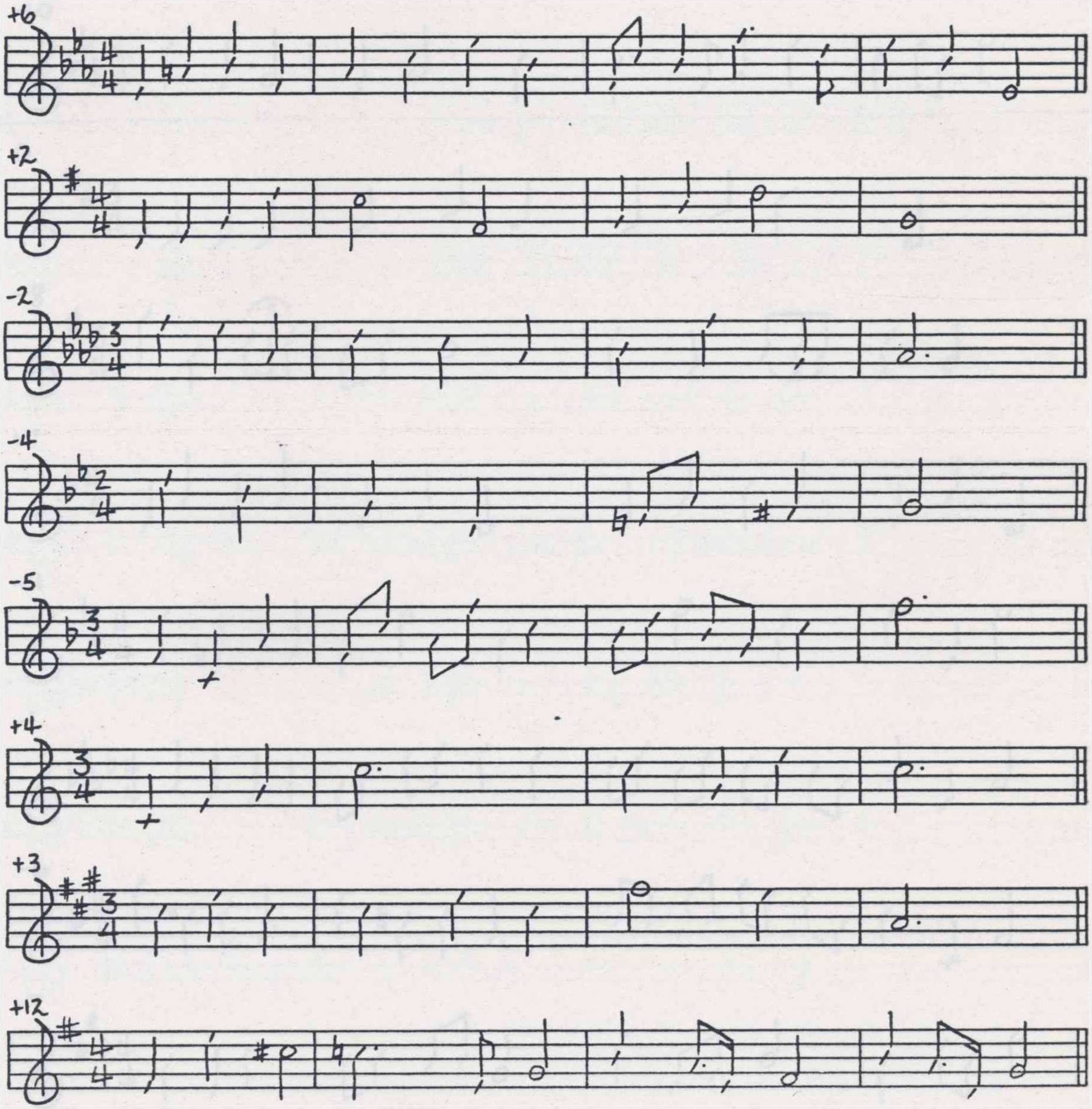


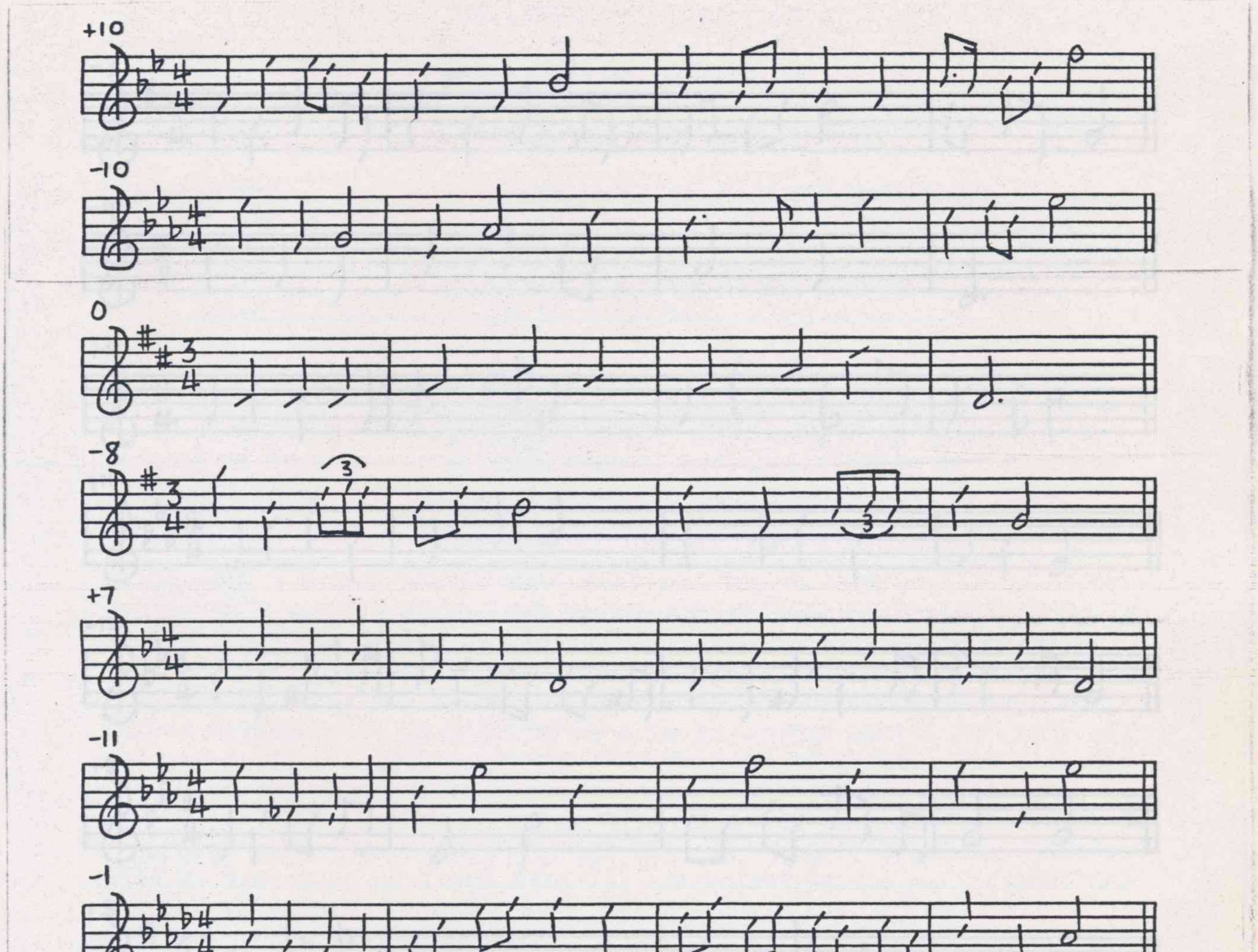
* These melodies were the same for all voices, only transposed.

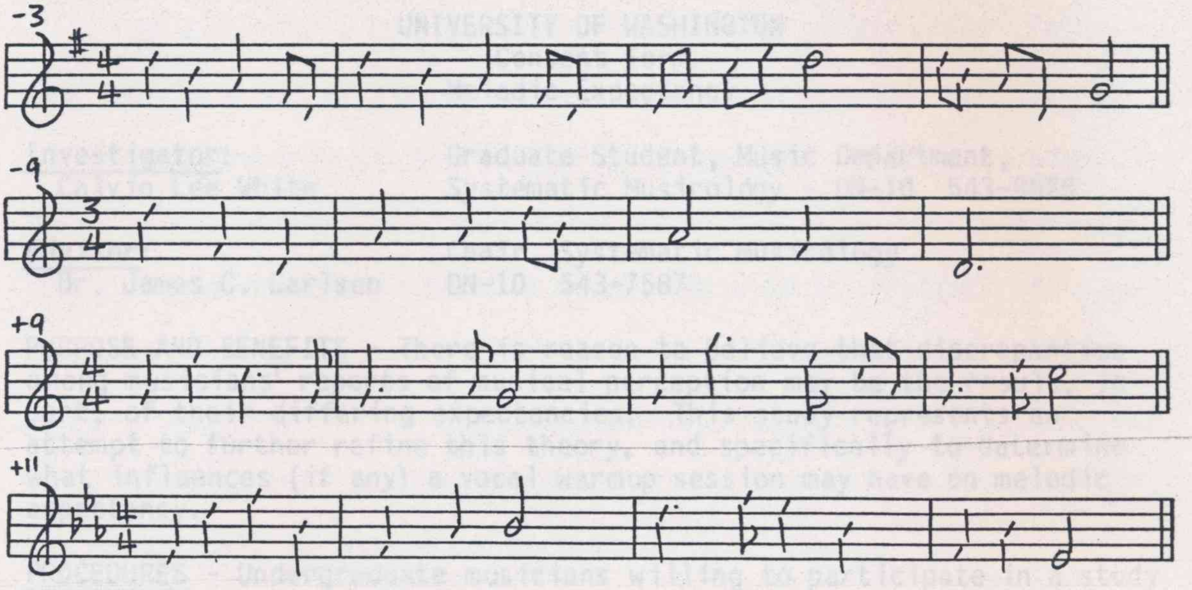

+10
-10
0
-8
+7
-11
-1
-6
-7


-3
-9
+9
+11
-12
+8
+5
+1

Disjunct -- Soprano




+10
-10
0
-8
+7
-11
-1
-6
-7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APPENDIX C
PARTICIPANT CONSENT FORM

UNIVERSITY OF WASHINGTON
Consent Form
Melodic Expectancy

Investigator: Graduate Student, Music Department,
Calvin Lee White Systematic Musicology - DN-10 543-9875

Advisor: Chair, Systematic Musicology
Dr. James C. Carlsen DN-10 543-7587

PURPOSE AND BENEFITS - There is reason to believe that discrepancies among musicians' reports of musical perception may be the result, in part, of their differing expectancies. This study represents an attempt to further refine this theory, and specifically to determine what influences (if any) a vocal warmup session may have on melodic expectancy.

PROCEDURES - Undergraduate musicians willing to participate in a study demanding a sung response, and having the ability to mentally conceive a pitch, will be tested in two sessions to determine their melodic expectancies. The participants will hear two pitches and be asked to sing the continuation as he or she expects it would have been. The second session will be preceded by a vocal warmup period for some of the participants. All responses will be tape recorded. Participants will have the opportunity to review the recordings and delete any portions. Each session will take approximately 45 minutes and must be separated by at least two days, but not more than two weeks. Sessions will be scheduled at times mutually convenient to the participant and the investigator.

RISKS, STRESS, OR DISCOMFORT - There are no risks or discomfort involved and it is quite likely that you will sense no stress.

OTHER INFORMATION - All individual responses will be kept confidential. You are free to withdraw from the study at any time without penalty.

Signature of investigator ________________________ Date __________

PARTICIPANT'S STATEMENT - "The study above described has been explained to me, and I voluntarily consent to participate in this activity (Ph.D. research)."

Signature of participant ________________________ Date __________

Copies to: Participant
Investigator's file

APPENDIX D

INSTRUCTIONS TO PARTICIPANTS

You will hear a test tone at the beginning of the tape. Following this will be a set of verbal instructions. Each example will begin with two metronome clicks followed by two pitches, then seven additional clicks. After the two pitches each time, sing the continuation you would have expected had the melody not been interrupted. You will have time to sing a short musical phrase before the next example begins. Remember, sing what you expected -- do not just try to create an interesting melody. Sing expected rhythms as well as pitches. The clicks are only an indication of tempo.

There are five sets of melodies. Sing on a neutral syllable, such as "loo". Remember the test tone will begin first. Do you have any questions?

APPENDIX E

DEBRIEFING STATEMENT FOR PARTICIPANTS

Participant Debriefing Statement

The purpose of the experiment in which you have participated has been to determine the influence of set upon melodic expectancy. If your posttest was preceded by a vocal warmup period you were given one of two different types of melodies to sing: melodies consisting primarily of stepwise motion, or melodies made up primarily of skips. I theorize that the warmup exercises had an influence on your sung expectancy responses in Session 2, particularly on the two-tone melodic beginnings which are not frequently encountered in music.

While a copy of my dissertation will be on file at the University of Washington Music Library upon the completion of this project, I can again assure you that your individual responses will be kept confidential.

Thank you for being a participant in my dissertation research.

Calvin Lee White

APPENDIX F
POST-EXPERIMENTAL SURVEY FORM

MELODIC EXPECTANCY RESEARCH
Post-Experimental Survey

Would you please take a moment to fill in the information requested below and return this form to me?

Thank you very much.

Calvin Lee White

Name ______________________________ Age (as of 11/1/81) ______

CIRCLE THE APPROPRIATE ANSWER:

I am primarily a: VOCALIST INSTRUMENTALIST KEYBOARD SPECIALIST

I am a: MUSIC MAJOR MUSIC MINOR NEITHER MAJOR NOR MINOR

How many years of private instruction have you had?

vocal ______ instrumental ______ keyboard ______

How many years of group participation have you had?

choir ______ band/orchestra ______

How many credit hours of music classes did you take at Northwest College in Autumn Quarter, 1981? ______

APPENDIX G

PARTICIPANT INFORMATION

	CONJUNCT Group	DISJUNCT Group	CONTROL Group	TOTAL
Sex				
Male	14	11	9	34
Female	6	9	11	26
Mean Age	20.95	21.15	20.55	20.88
Music Specialty				
Vocal	10	11	10	31
Instrumental	5	4	4	13
Keyboard	5	5	6	16
College Status				
Major	12	14	12	38
Minor	5	4	4	13
Other	3	2	4	9
Mean Years Private Instruction	5.5	6.95	6.75	6.4
Mean Years Group Instruction	12.15	11.25	9.4	10.93
Mean Credits, Autumn Quarter	5.35	4.75	5.1	5.07
Vocal Range				
Soprano	2	6	5	13
Alto	4	3	6	13
Tenor	8	6	4	18
Bass	6	5	5	16

VITA

Name: Calvin Lee White

Date of Birth: June 25, 1950

Place of Birth: Norfolk, Virginia

Parents: Mr. and Mrs. E. R. White

Secondary Education: Great Bridge High School (1968)
Chesapeake, Virginia

Higher Education: Bachelor of Arts, (1972)
Central Bible College
Springfield, Missouri

Graduate Study, (1973)
University of Louisville
Louisville, Kentucky

Master of Arts for Teachers, (1978)
University of Washington
Seattle, Washington

Family: Deborah Kitts White, wife
Amy Leigh White, daughter