

EXPLORING PEAK EXPERIENCES AS ELICITED BY MUSIC: A
QUALITATIVE STUDY

by

Alexander I. Babani

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Frank Echenhofer, Ph.D., Chair
Faculty, Clinical Psychology

Kay Roskam, Ph.D., MT-BC

Alexander I. Babani
California Institute of Integral Studies
Frank Echenhofer, Ph.D., Committee Chair

EXPLORING PEAK EXPERIENCES AS ELICITED BY MUSIC:
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Abstract

The present research examines the question, “What are the emotional, psychological, or other possible responses that occur during a peak experience as elicited by music?” Music is experienced at the physiological, emotional, and cognitive levels. Many individuals find that music activates insight, inspiration, emotional catharsis, and enhanced self-awareness. This study aims to document peak experiences elicited by music that in some prior research has been called “the chills,” in part, because of its physiological characteristics, and that there has always been a hint, though not fully investigated, of an emotional component as well.

During initial interviews, 21 participating adults between the ages of 21 and 65 identified musical selections that had elicited peak experiences in the past. As participants listened to these musical selections they were asked to describe their experiences. Brief semi-structured post-listening interviews were also audio taped. Interviews were transcribed and were qualitatively analyzed to identify themes that characterized music-elicited peak experiences.

The most salient and unique finding is that a sense of emotional ambivalence—emotions of both joy and sadness—were often simultaneously

present during the peak experiences elicited by music. This may mean that the peak experience as elicited by music is the felt sense of a shift from a dualistic to a nondualistic way of experiencing, i.e., that the experiences of joy and sadness, which are usually felt as opposite, are felt in the peak experience as unified.

Music may facilitate a more profound appreciation of emotional experiences that transcends the normal dichotomy between pleasant and unpleasant. The findings suggest that music enhances memory along with the emotional responses to that memory, and that it is possible to use music in purposeful ways to deepen emotional self-awareness. One intriguing finding was that some participants reported that being observed while listening to music diminished their capacity to have peak experiences, yet others reported a more profound emotional response.

Future qualitative research is needed to comprehensively characterize peak experiences as elicited by music. Additional studies could record neuroscientific and experiential data simultaneously to examine the neural substrates related to music-elicited peak experiences. These findings might enhance the knowledge base needed for more efficacious use of interventions in music therapy.

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Chapter 1

Introduction: Peak Experiences Elicited by Music

Statement of the Problem and Context of the Study

The primary question of this research study is “What are the emotional, psychological, or other possible responses that occur during a peak experience as elicited by music?” The purpose of this study is to explore peak experiences elicited by music selected by the participants, using a criterion of a previous strong emotional/psychological response to that music.

Purpose and Significance

Why should we study peak experiences that occur while listening to music? This dissertation acknowledges the importance of peak experiences that are elicited by music. The primary purpose here is to add to our knowledge about this profound human experience and the role music plays. Music holds significance in nearly every aspect of human life, including the therapy room. Music can be a powerful tool in motivating people towards a variety of behaviors. For these reasons peak experiences and the role of music as catalyst deserves more serious attention and systematic research.

In clinical psychology, greater insight into affective states could help a variety of mental health practitioners and health care systems to better serve those who depend on them. This researcher is particularly interested in providing a foundation for future research to learn more about how the psycho-emotional processes that occur during peak experiences while listening to music might

facilitate personal growth. Such future research could examine how more precise applications of music could foster enhanced meaning, self-actualization, and new music treatment programs for substance abuse, depression, and other mental health conditions.

There are other vital reasons peak experiences are important to understand. Many psychologists and therapists recognize that peak experiences often are the source of existential, religious, and spiritual beliefs that are of crucial importance for individuals to thrive within cultural and societal frameworks. Whether the therapist or client recognizes these beliefs as an integral part of life or not, conscious and unconscious beliefs about the nature and meaning of human existence lie at the core of our relationships, values, ethics, morals, and how we act and interact in public and private life. Bringing these often unconscious beliefs to conscious awareness, as happens in the therapeutic relationship, can inform our understanding of the values and behaviors of both the individual and the collective.

A greater understanding of such beliefs arising from peak experiences could allow practitioners in clinical psychology to appreciate that there is an enhanced range of affective states that human beings experience. For those who experience them, these affective states can often stimulate personal growth, empathy, creativity, and a deep sense of meaning and fulfillment. By highlighting the power of repeated peak experiences, the current study raises some important and practical questions for future research. For example, if peak experience is a powerful intrinsic force that has the capacity to encourage profound and

meaningful responses, how can this be utilized as a motivational force in other contexts?

Overview of Methodology and Method

Methodological approach.

A qualitative research approach is particularly suited to the type of inquiry into phenomenology because of the emphasis on the participants' perceived experience with music. Given the study's focus on the affective and descriptive aspects of the experience and its underlying meanings, a qualitative approach is best suited.

Methods and procedures.

This research project was a qualitative study using structured interviews with transcripts of interviews being subjected to textual analysis to gather meaningful themes representing the nature of peak experiences elicited by music. Individuals were invited to voluntarily participate in this research study; 35 participants were selected, and 21 ultimately participated. The Tellegen Absorption Scale: Personal Interests and Experiences (2006) [TAS]; see Appendix A) was used as a tool in selecting appropriate participants. This scale measures "absorption," or the "capacity for total involvement in imaginative activities (Radtke & Stam, 1987). Participants with a higher score on the trait of absorption also demonstrate the capacity to more fully immerse themselves in

their current experience and have been shown to be prone to peak experience, most remarkably, in association with music (Roche & McConkey, 1990).

Thematic analysis based on Boyatzis' (1998) protocol was used to analyze participant interviews to devise the common themes inherent in this phenomenon. The 21 interview transcripts were coded using Boyatzis' (1998) data driven qualitative thematic analysis method. All transcripts were imported into Nvivo 8 (QSR International Software, 2008) a software program for qualitative coding and data management. Codes from prior research initiated the process, the preliminary inductive codes were generated from the raw transcript data, and then substantial data driven codes were developed from the interview transcripts. The methodology and methods are explained in greater detail, including issues of validity and reliability, in Chapter 3.

Theoretical perspectives.

The term *peak experience* as used in this dissertation is based on the work of psychologist Abraham Maslow, who reported upon his research and discussed the phenomenon at some length in his 1964 *Religions, Values, and Peak Experiences*. Maslow believed that everyone is capable of having peak experiences, but that often such experiences are taken for granted or suppressed. He understood peak experiences as moments in life characterized by feelings of joy, wonder or awe, and intense happiness and well-being.

Maslow (1964) suggested that peak experiences occur in all cultures, and that these experiences are described in the same general way. The language

describing the contents of peak experiences may be different, indeed should be different considering the diversity of cultures. The term *peak experience* will be defined in greater detail in various sections of the dissertation.

Music, acting as a catalyst of peak experiences, has not been extensively examined in the research literature, although it has been recognized as a widely reported trigger for peak experiences (Maslow, 1968). Research examining music as a trigger for peak experiences has used the term “the chills,” which has emphasized the physiological response aspects of the experience (Blood & Zatorre, 2001; Blood, Zatorre, Bermudez & Evans, 1999; Goldstein, 1976, 1980; Krumhansl, 1997; Lewis, 2002; Panksepp, 1995) Although the chills may be elicited through other means than by music, the chills as a response to music can be quite profound as reported by people who experience them. I propose that the experience of “the chills” is another term for peak experience, which is often elicited by music.

Delimitations and Limitations

Relative to the *delimitations* of the present study, I chose to explore and analyze individuals’ descriptions of peak experiences elicited by self-selected pieces of music. Thus I am *not* looking at peak experiences stimulated by *other* kinds of catalysts.

Further, I focus primarily on the *psychological* and *emotional* dimensions of these experiences; although I did observe and ask about physiological sensations, I did not attempt to measure such physiological aspects as skin

temperature, rhythm of breathing, pulse, and electroencephalogram (EEG). Prior studies on the physiological aspects of listening to music have demonstrated that sound and music stimuli do affect physiological systems. Much research has already been conducted on this topic, and the purpose of the present study is to describe the experience itself from the viewpoint of the participant, thus I deemed that adding a sophisticated technical apparatus would be too intrusive. (A detailed examination of the studies of physiological responses to music is provided in the literature review).

Relative to the *limitations* of the current study, because I am using a qualitative approach that lends itself to describing the complex and highly nuanced realm of lived human experience, the number of participants is relatively small—21. However, this is appropriate to the goal of the current research, wherein it is not necessary to produce data on large populations that can be extrapolated to even larger populations, but instead to describe in detail various aspects of a type of experience that can be quite subtle and difficult to quantify. Given these limitations, the results of the study may provide a foundation for future music research and applications for individuals, music therapists, and psychologists involved in using music as a tool for personal growth or therapeutic purposes.

Inductive code development is a time- and labor-intensive task presenting limitations. Using definitions and descriptors from previous studies facilitated the process. However, in an effort to remain open to new data, code developed from

prior research was balanced with code that was developed from this project in order to place a strong emphasis on participants' descriptions in this current study.

A final potential limitation involved my own relationship to some of the study participants as colleagues or acquaintances. Where a previous relationship exists, the possibility of researcher bias exists. In these instances, I made a conscious effort to be aware of my own preconceptions and attempted to remain open to the entirety of the listener's experience. In order to address this, the researcher put emphasis on remaining neutral while encouraging the participant to provide a full and meaningful description of his/her experience. By reducing conversation between researcher and participant, potential bias was reduced.

Organization of the Dissertation

Following this introduction, a literature review in Chapter 2 examines the role of music in psychological health from a historical perspective. Empirical studies that examine the biological basis of music and peak experiences are then reviewed. I conclude Chapter 2 by discussing the literature as it relates to the current study, identifying unresolved issues, and proposing a method of study to advance knowledge in this particular area of clinical psychology and music therapy.

Chapter 3 describes the methods in detail that were employed in this research: design of the study, participant selection, data collection methods, how the data was analyzed (using text analysis software and the hybrid approach), coding, and formats to address reliability and validity.

Chapter 4 presents the results of the current study beginning with a presentation of the participants, a summary of individual interviews, and highlights of participants' responses to the selected music. An outline of the nine salient themes that emerged from the interviews is also provided.

Chapter 5 discusses the findings of the research and shows how the research questions have been answered. This chapter examines the meaning of the results of the present study in light of prior research findings and the theoretical issues presented in the literature review. Finally, implications for future research, and applications for clinical psychology and music therapy are presented.

Chapter 2

Review of the Literature

Peak Experiences and the Influence of Music on Psychological Health

In the first dissertation written on the topic of peak experience, Leach in 1962 (cited in Bugental, Pierson, & Schneider, 2002) described *peak experience* as,

a highly valued experience which is characterized by such intensity of perception, depth and feeling or sense of profound significance as to cause it to stand out, in the subject's mind, in more or less permanent contrast to the experiences that surround it in time and space. (p. 11)

It is Maslow (1971) who is considered to have coined the term *peak experience*; he described it in this way:

A sudden feeling of intense happiness and well-being, and possibly the awareness of "ultimate truth" and the unity of all things. Accompanying these experiences is a heightened sense of control over the body and emotions, and a wider sense of awareness, as though one was standing upon a mountaintop. The experience fills the individual with wonder and awe. He feels at one with the world and is pleased with it; he or she has seen the ultimate truth or the essence of all things. (p. 164)

Maslow added that peak experiences are self-validating, self-justifying moments with their own intrinsic value; never negative, unpleasant, or evil. These experiences can be accompanied by a loss of fear, anxiety, doubts, and inhibitions. Although Maslow (1971) noted the experiences as "never negative," the peak experience itself can activate emotions that may be considered negative by the individual.

For general description purposes there are two types of peak experiences—relative and absolute. In *relative* peak experiences, the person maintains an awareness of subject and object; these are extensions of the

individual's own experiences. This type of experience is defined more by the experiences, thoughts, emotions, and ideas of the individual and includes the possibility that the person may be aware of an altered state. They are not considered true peak experiences, but rather inspirations or ecstasies. The majority of peak experiences fall into this category (Laski, 1980). *Absolute* peak experiences can be characterized by mystical or transcendent themes. In this type of altered state, the experience may include ideas and thoughts outside the individual, that is to say, something the individual may not have experienced directly. These states may have a spiritual or religious flavor. In these types of peak incidents the individual may be in a trance-like state of mind and possibly unaware of what is happening in the moment (Laski, 1990).

Maslow's work is considered groundbreaking, in part, because he was one of the first to study individual spiritual yearnings using systematic scientific methods to examine the psychological aspects of religion and mysticism. Little of this type of work had been undertaken since the work of psychologist and philosopher William James at the beginning of the twentieth century. Such experiences may also involve awareness of transcendental unity or the perception of life and the world from an altered and profound perspective. Typically, peak experiences arise suddenly; they may be facilitated by meditation, intense feelings of love, great art, music, or the beauty of nature.

Historically, there has always been a perceived relationship between music and psychological health. The *New Harvard Dictionary of Music* (Randel, 2003) noted that the word *music* derives from word *muse*, which was used to refer to

each of the nine Greek goddesses who presided over literature, the arts, and the sciences. Historical evidence suggests that music has a divine origin as well as a connection to scientific thought. It has been considered divine because sound, especially music, has been thought to be an earthly reflection of a vibratory activity taking place beyond the physical world (Tame, 1984).

Listening to music or participating in a musical experience as a way to improve either physical or emotional states can be traced back to prehistoric times (Huron, 2001; Nettl, 1956; Noy, 1967; Randel, 2003). Examples of the connection between music and physiological as well as psychological health abound (Davis, Gfeller, & Thaut, 1998; Rider, 1997; Roskam, 2003). During the Renaissance, Paracelsus used the metaphor of musical medicine to indicate a form of therapeutic music composed to deal with specific illnesses (Hall, 1990). This theme has been repeated in several ways, such as medieval minstrels playing music for patients in convalescence and fostering their recovery. Two such examples come from ancient Egyptian and Native American practice; these traditions are very disparate in both geography and culture, yet in both musicians were employed as healers in religious ceremonies to cure physical ailments and psychological disorders such as depression (Roskam, 2003).

At one time, language and music may have been undifferentiated as a mode of communication between people (Nettl, 1956). It is possible that music, like language, gives us a context of emotional experiences and cognitive concepts that tend to shape perceptions of the world in which we live. As it has evolved, however, language has served to differentiate peoples and cultures. Music, on the

other hand, has served as a unique force to unite people. Music can often express what words cannot; it has been called “the universal language.” This descriptor may be due, in part, to the fact that all cultures use and appreciate music as a culturally relevant phenomenon. Music is indeed universal: people in all cultures have songs associated with specific meanings and emotions; most have songs that tell the stories and history of the people and their culture. One recent and vivid example of this is found in the anti-war messages of the American protest songs of the 1960s and 1970s.

Music has long been a part of the rituals marking the milestones and passages of life stages. Responses to music may be considered archetypal behaviors, much in the same manner that Jung (1950/1973, 1964) described the *collective unconscious* with the implication that music may transcend language and culture. The fact that music holds such strong symbolic and psychological meaning may explain its omnipresence throughout human history. Jung acknowledged this when he told Margaret Tilly (1977), a music therapist, “This reaches the deep archetypal material that we can only sometimes reach in our analytical work with patients” (pp. 274-275).

A conception of music as mere entertainment or diversion undeniably minimizes the depth, diversity, and complexity of people’s relationship and experiences with music (Deliège & Sloboda, 1996). The difficulty in seeing the potential of music may lead some to consider it insignificant. However, this belies the fact that music may have its origin in human evolutionary history (Miller, 2000; Panksepp, Normansell, Herman, & Crepeau, 1988). Panksepp (1995) and

Perutz (2001) believed that human beings have an innate response to music that may be determined by the first rhythm that we ever hear—the mother’s heartbeat while we are in the womb. A similar theme is found in the link between infant survival and maternal singing (Fernald, 1992). This link is just one example of the significance that music has for us from the very beginning of our lives. It may be that emotions such as joy, sadness, loss, longing, and fulfillment are elicited by music partly because of that initial connection with the mother’s heartbeat and partly because of the existential nature of these emotions.

Researchers have demonstrated that music can have a positive impact on human development (Cunningham & Sterling, 1988; Kraus, 1993). Despite a history of people’s acknowledgment and use of music, systematic research on the underlying process of musical influences has received interest as a subject of scientific study only in the mid-twentieth century. With the advent of music therapy in the 1950s, and the increasing use of music in medical settings, we need a theoretical framework that may help us more clearly understand the human response to music (Rider, 1997; Roskam & Refer, 1999; Taylor, 1997). It is my hope that by adding to our knowledge regarding peak experience as elicited by music may serve to generate further investigation of music’s therapeutic effects.

Music is a highly flexible art form, unique in that whether one is musically trained or not, one can participate in it to satisfy psychological needs at any given moment. It is well documented that music can facilitate or minimize the experience and expression of emotion (Aldridge, 1994; Clines & Wertheim, 1982; Hodges, 1999; Stanley, 1992). In some circumstances, music can excite or relax,

stimulate the expression of unspoken emotions, bring enjoyment or sadness, and stir a wide range of other emotions in listeners. It is also possible that music may intensify the existential need for spiritual experience.

People can and do respond to music, both positively and negatively; thus its effects can be utilized for therapeutic purposes. Most people can recall special moments when music played an important role in evoking feelings and memories. A number of humanistic writers in psychology and music therapy (Aigen, 1996/2005; Bonny & Savory, 1997; Maslow, 1971) have discussed the inherent capacity of human beings for achieving positive growth and self-actualization in relationship to music. Bunny's work with Guided Imagery and Music (GIM™), particularly as clients move towards peak experiences and higher levels of consciousness, can be seen as an application of Maslow's theories. Additionally, for research that has been conducted into the efficacy of music in the clinical setting the reader is referred to professional publications such as *The Psychology of Music*, *The Journal of Music Therapy*, *Music Therapy Perspectives*, *Musicae Scientiae*, *International Journal of Arts Medicine*, *The Journal of Research in Music Education*, and *The Music Educator's Journal*.

Our knowledge in the area of music and emotional response, and the psychological and physiological implications of this knowledge, are quite complex. Much progress has been made during the last decade, and it is the goal of this researcher to contribute to this important area of study.

Theories of Emotional Response to Music

This section reviews prior research relating music and emotion. A long-standing theme in the literature illustrates the complexities of attempting to understand how music is related to emotion—and evokes emotion in—listeners. One challenging aspect of investigating the relationship between music and emotion is that researchers must take into consideration the emotions felt by the listener as well as the emotions the composer *intended* the music to evoke (Gabrielsson, 2001-2002; Gabrielsson & Juslin, 1996). A further complication is that the performer's interpretation of a piece of music can influence the listener responses. Although emotions are provoked in the listener through music, they may not necessarily represent the emotions expressed in the music itself. Dowling and Harwood (1986) commented on this concept, "Not only do listeners have emotional reactions to music, but pieces of music also represent emotions in ways that can be recognized by listeners" (p. 201). On the other hand, Dowling and Harwood indicated that psychologists themselves acknowledge that art in general, and *music in particular*, may evoke a strong emotional response. However, it seems relatively few psychologists seem to have considered this a subject of investigation.

The following section, Psychology of Music, focuses on ideas and considerations of various theoretical perspectives from this particular field; it provides a framework for the project as a whole and presents key ideas and assumptions that are addressed throughout.

Psychology of Music

Expectancy theory.

The main organizing force concerning emotion in music and expectancy theory is the work of L. B. Meyer (1956, 1967, 2002), who posited a number of key points that continue to influence thinking about the aesthetics and philosophy of music today. Meyer used information theory to explore the relationship between music and emotion to address the nature of meaning in music. He accomplished this by examining those aspects of meaning that result from the understanding of and response to relationships inherent in the music. One crucial point in Meyer's theory is that different musical processes and structures give rise to various responses. Certain elements within a piece of music create expectations from a listener concerning the development of the music. This is of major importance to expectancy theory, because as the musical event continues, the probability of a particular conclusion increases, while meaning and information decrease. The *expectation* the listener develops about the further course of a musical event is a determinant for how the individual responds to it. The majority of studies reviewed here—and the current research—assume the validity of expectancy theory.

Meyer's (1956) theory suggests that there is a parallel between the use of precise musicological terminology and the accurate representation of psychological definitions (such as *tension* and *release*). Music offers a progression of engaging surprises set against the condition of anticipation, arousing expectations that may or may not be directly and immediately satisfied.

Implicit in expectancy theory is that music does not give rise to a consistent, differentiated affective behavior, such as a sadness response; rather, the listener focuses attention on his or her own level of arousal. Definitions of musical and other terms relevant to this study can be found in the glossary in Appendix A.

Arousal theory.

Along similar lines, another theorist often cited, N. Frijda (1986), provided an analysis of the behavioral and emotional responses to music. Frijda characterized arousal as encompassing four response systems: the autonomic, cognitive, electrocortical, and behavioral. This viewpoint is especially helpful to research in that it acknowledges the bodily changes that accompany emotion. Frijda's ideas imply that the bodily changes that accompany emotional states are discerned according to the kind of appraisal, or kind of response readiness, required in coping with the auditory environment. Researchers linking emotional response to music often refer to arousal theory, and it is one of the theoretical assumptions of the current study, which assumes that physiological responses *will* occur. Using this assumption the current study relies on self-report rather than on measurements from technical instruments or machines. One reason for this choice was that the benefit of machine measurements would likely be at the cost of intruding on the listener's affective state.

Anticipations and discrepancies may be related to emotional responses in a music listening experience. The sense of well-being when seemingly positive emotional events occur continuously, or the experience of feeling depressed or

irritable when a stream of perceived downbeat events occurs, can also be seen in the link between emotion and music. Theory suggests that arousal occurs when the experience falls short of anticipation. Conversely, expectations fulfilled confirm and comfort the listener. The expectation and fulfillment, or the denial of expectation, in music is thought to be the singular carrier of emotion in music. This is the theoretical assumption of most research investigating music and emotion (Juslin, 1997a, 1997b; Krumhansl, 1997), and fits well with research on the neurological and biological bases of musical responses. This will be addressed in more detail in the section entitled Neuroscience and the Biological Basis of Music Perception.

Further research into music and emotion theory by Langer (1967) and Berlyne (1974) has been primarily supportive of Meyer. Kivy (1990), on the other hand, held the position that music simply expresses emotions without inducing them; however, this appears to be the minority view.

Music offers a progression of engaging surprises set against the condition of anticipation. From a slightly different perspective, an author and composer Jourdain (1997) commented about the ideas of expectancy and music:

Music sets up anticipations and then satisfies them. It can withhold its resolutions, and heighten anticipation by doing so, then to satisfy the anticipation in a great gush of resolution. When music goes out of its way to violate the very expectations that it sets up, we call it 'expressive.' Musicians breathe 'feeling' into a piece by introducing minute deviations in timing and loudness. And composers build expression into their compositions by purposely violating anticipations they have established. (p. 312)

This chapter's section entitled Overview of Past Studies, and Chapter 3 (on methodology) goes into greater detail about how expectancy theory and arousal theory are applied in the present study.

Psychoacoustical approach.

There have been three primary theoretical approaches to understanding how a listener may interpret or respond to music: psychoacoustics, interpretive, and social context theory. The first approach, psychoacoustics, emphasizes the importance of understanding the structural characteristics of music that trigger various emotions in listeners. This suggests that music is an external object that carries emotional meaning in itself; it is independent from human subjectivity and cultural differences (Meyer, 1956).

Another important idea underlying the psychoacoustical approach involves the effects of other musical elements such as tempo, pitch, texture, volume, and mode, which have also been given much attention and studied over the years. Bruner (1990) offered some generalizations about the musical qualities that induce different moods based on a review of these empirical studies. For example, excitement can be elicited by music in major mode, i.e., music that is fast, loud, medium pitch, and uneven in rhythm, and contains dissonance. A sentimental feeling can be elicited by the minor mode, which often is a slow tempo, medium pitch, consonant harmony, soft volume, and flowing rhythm.

While there may be a certain degree of consistency in correlating musical characteristics with affective responses, the findings are not strong enough to

explain the great irregularities observed in these studies (Bruner 1990; Dowling & Harwood, 1986). Due to the complexity and the design of this dissertation, these factors are not addressed and are outside the scope of the study purpose. Instead, more emphasis is given to the participants' relationships with music, which is discussed in more detail in Chapter 3. Specific psychological responses linked to particular musical parameters—such as tempo or pitch—have not been discovered. Bartlett (1999), a music psychologist, went a step further saying, “The relationship may not exist due to the idiosyncratic nature of musical responses” (p. 247). A meta-analysis (Abeles & Chung, 1996) of the literature identifies only a few variables—such as preference or gender that seem to establish a linked response. Although researchers have made significant efforts to identify the interaction effects of different variables, Abeles and Chung noted that these types of studies have not yielded fruitful results thus far.

Interpretive approach.

Inevitably, attention was drawn to the necessity of looking into the subjective factors involved in a music experience, namely adopting the interpretative approach. Adherents to this theory suggest that emotional responses to music are essentially the result of a complex mix of factors including physiological reactions, associations with past experiences, personality, musical training, familiarity or associations with a particular piece of music, current mood, and cultural influences. In other words, how the listener *interprets* musical stimuli is the main area of psychological exploration. The current study uses the

interpretive approach as the basis of its methodology by giving the listener's interpretations primary focus.

Much of the earlier work in music and emotion, as reviewed by Dowling and Harwood (1986), concentrates on theories of musical semiotics. This is of particular interest to the current study in that musical semiotics describes the ways in which a listener receives signs, associations, symbols, and icons while listening to music. How the listener perceives music—including the ways in which such entities become associated with significands containing emotional connotations—is the primary area of exploration of this study.

In a series of studies, Juslin (1997a, 1997b), a music psychologist from Sweden, investigated the links between music and emotion. In the first experiment (Juslin, 1997a), guitarists played the same musical selection at different times, each time expressing a different emotion. This was done in two listening sessions using synthesized performances of a short melody on a cassette. In the first session, an attempt was made to recreate representative cue profiles of five emotional expressions: happiness, sadness, anger, fear, and tenderness. In the second listening session cues manipulated included: tempo, sound level, spectrum, articulation, attack, vibrato, and timing by the performing guitarist. The listeners—adults with only a moderate level of musical training—made forced-choice judgments regarding the intended emotional expression. That study is a particularly good example of the idea that expectations, as they relate to music, can and do convey emotion. The guitarists were successful in communicating emotions because the listeners correctly identified each performance by the

intended emotion. However, the music was always the same piece, although it was played differently. Therefore, it was not the composer's emotional intention that was converted into the language of music, but that of the instrumentalist.

The second experiment (Juslin, 1997b) was designed to understand how the specific emotional message was conveyed. This investigation quantified the emotional communication in music and analyzed the detailed structure of each performance finding that two musical dimensions could explain the transfer of emotional content: tempo and articulation. In this instance happiness and anger were associated with louder music, and sadness and fear were associated with softer music. While this second study found that listeners were reliably able to detect the emotion being communicated, it was hard to determine the exact physical parameters conveying the emotional aspects of the performance, something that is also confirmed in this dissertation.

Juslin (1997a) acknowledged the importance of the physical performance to transport and mediate the emotional material through his adaptation of the lens model (Brunswik, 1952) from emotion psychology. The lens model proposes that complex stimuli patterns are processed through a lens. Scattered stimuli are focused into a single perception of the environment and thus appear to reduce the complexity as well. What is relevant in this model to this dissertation is that the actual state of the auditory environment and the perception of it may overlap as accurate, or may be far apart. In other words, how the listener perceives the music reduces the complexity in that the listener's perception is considered important, rather than the possible intention of the composer or performer. Juslin (1997a)

demonstrated that the same performance cues, tempo, and articulation that were used to convey emotion overlapped as the same cues that listeners perceived as the intended emotion. Juslin (2002) continued research along the same lines of inquiry, with results showing further support in that about 80% of the variance in the listeners' judgments could be explained by the performer's expressive intention.

Social context theory.

Some theorists adhere to a viewpoint that includes environmental factors and points to the importance of studying the psychology of music in the social and interpersonal contexts in which musical meaning is constructed. One often-cited study found that musical choices are affected by socially induced emotional states (Konecni, 1982). As part of the design, the researcher verbally "insulted" the subject. Musical choices were made prior to the insult and compared afterwards. Prior to the insult, the musical choices of the subject tended to be of "simple melodies." After the insult the musical choices tended to be more complex. When all participants were exposed to music that was complex, those who were insulted were more likely to display "retaliatory behavior" toward the researcher than those who were not previously insulted.

Konecni's results suggested that musical choices are affected not only by the music itself, but also by socially induced emotional states. Interestingly, these results also show that music in itself does not have a direct impact on aggression, but that it can moderate or amplify anger already present in the listener. This

finding, though quite important, seems to be overlooked in debates about music and popular culture particularly in association with adolescents.

In other research, North and Hargreaves (1997) demonstrated that responses to music are associated positively with responses to the music performers. The music performer can influence aesthetic responses. For example, a performer's physical attractiveness may mediate the nature of this relationship. With social context theories applied in research the investigation of emotional response to music has taken a different direction. Instead of measuring the types or intensity of emotions a person might experience, the dependent variables are external behavior or the attitude change as a result of music exposure. What these types of studies demonstrate is the growing considerations and complexities when researching music and the resulting emotional response(s). I do not explore this line of thought any further here in order to give space to other areas more relevant to the current study. The reader is encouraged to utilize the resources referred to herein and to continue investigating this provocative subject. The next section reviews literature from a neuroscience perspective that examines the relationship between music and emotion.

Neuroscience and the Biological Basis of Music Perception

This section reviews research from neuroscience as it relates to music and introduces cognitive neuroscience studies that address the effects of music on the brain. Much of this research is quite diverse and preliminary due to the recent emergence of this type of investigation, as well as new technologies that are

constantly being introduced. The sheer volume of available research literature is such that an exhaustive treatment is well beyond the scope of this paper. The purpose in this very brief review is to provide a synthesis focused upon a few selected topics of the current research that is most relevant to my research question. A brief list of medical terms and definitions is provided in Appendix B.

Anatomy of the brain and musical function.

What is known about the brain and musical response has been winnowed down in this section to review specific musical behaviors as they relate to brain function and altered states. Studies of peak will be viewed from a neuroscientific perspective. (As noted earlier, a number of disciplines use different descriptors. In the literature the term “pleasure response” is used.)

The current consensus is that music is processed in multiple cortical locations, encompassing diverse physiological and psychological levels. The process involves human affect and cognitive functioning in concert with particular neurophysiological impact. Neuroscience has made significant progress in explaining how the brain processes language, vision, and motor control. Relatively little, however, has been examined concerning emotional response to sound and music. One of the noted challenges is that music is difficult to study in neurological terms (Peretz, 2001). Processing pitch, harmony, melody, rhythm, meter, timber, etc., involves complex cognitive faculties and cerebral systems. It is not yet known exactly how, why, and where these musical responses are processed in the brain. Nevertheless, Mark Tramo (2001), a neurobiologist at

Harvard University Medical School, has noted distinctive patterns of neural activity within the auditory cortex and other areas of the brain that may relate specificity to the processing of music.

From the 1970s to the 1980s, researchers referred to, and hoped to find, a centralized site in the brain that deals specifically with music. However, this idea was never proven, though hope was held out for a lengthy period of time. The theory that musical abilities are localized was explored by focusing on an assumed correlation between music expression and language processing (Jackendoff & Lerdahl, 1982; Pribram, 1982). However, in using that same line of inquiry other studies have now demonstrated that musical abilities are not localized to a specific brain region (Peretz, 2002; Petsche, Lindner, Rappelsberger, & Gruber, 1988; Sergent, 1993). It is likely that existing perceptual, cognitive, and motor systems are functionally integrated in a way that gives rise to musical behavior, although this does not necessarily produce an emotional response.

It appears that humans have not evolved a single center specifically designed to deal with music, but instead music response and/or ability involves a complex system of various neural networks (Peretz, 2001; Taylor, 1997). For instance, neuroscience research supports the view that the left hemisphere of the brain is involved with general music ability in musicians, including perception and production of speech, perception of rhythm and prosody, lyric performance during singing, and the temporal sequences of music-reading ability. The left side of the brain is referred to as more analytic in function and nature. The right

hemisphere of the brain, considered to be the side that engages creativity, is involved with processing of musical pitch, control of sound intensity, identification of musical chords, melody perception in non-musicians, visual pattern recognition, singing, auditory pattern recognition, and expressive rhythmic and melodic behavior (Taylor, 1997).

Evidence for the biological foundations of music is growing, and basic science continues to yield promising new information about the neuroscientific effects of music (Blood & Zatorre, 2001; Hodges, 1999; Peretz, 2002; Rider, 1997). Music therapists and physicians are reporting significant results when music is used with neurologically and physically impaired patients (Peretz, 2001; Rider, 1997; Sacks, 1990; Taylor 1997). Renowned neurologist Oliver Sacks (2002), described the importance of music to patients in this way:

The music must be the *right* kind for each patient. Music that has meaning and evokes feeling for that individual. Music therapists who work with a geriatric population often find that only old popular songs can bring such patients to life. While singing them, these patients are able to find a brief but intense sense of community and connectedness with their past lives and perhaps a deep emotional catharsis. (p. 5)

It has also been demonstrated that rhythm, another aspect of music, in and of itself positively influences brain activity during learning. Scientists have reported that after a rhythm sequence is stopped, brain activity occurs in anticipation (Friedman, 2000). Music therapists have named this effect as *entrainment*, which is characterized by an individual's physiology attuning to musical functions such as rhythm or tempo. The wide range of entrainment phenomena is not based on a single physical process. Instead the concept of entrainment describes a shared tendency of a wide range of physical and

biological systems (Thaut, 1990). Examples of this alignment would be rhythm and heartbeat, or respiration rate, or even pulse rate.

At the neurological level, this lends further support to Meyer's expectancy theory (1956, 1967). The creation of expectancy implies a familiarity between the music and the listener. Changes in the expected pattern of sounds may be appreciated because they stimulate curiosity and seem to excite the part of the brain that responds to novelty. This part of the brain is located in the limbic system, which is the seat of the "fight or flight" response as well as the senses of pleasure and reward (Carlson, 1992).

Taylor (1997), a music therapist, proposes a biomedical theory of music, and provides a strong rationale for music as a medical intervention: "Behaviors in response to musical stimuli must result from the effects of music on those same neurophysiological structures and processes. Knowledge of those musical effects enables their use in medical and other therapeutic applications" (p. 34). This line of thinking raises the question that if specific responses to music can be mapped and then linked to what is needed by patients to accelerate their healing, applying music prescriptively may in turn hasten recovery. Understanding how music affects the body at the neurological level may support this goal. Along similar lines, the idea of using music that is linked to what is needed by the patient at the psychological level may help patients to effect psychological change.

A team of researchers (Blood, Zatorre, Bermudez, & Evans, 1999) at the Montreal Neurological Institute examined emotional responses to music with subjects whose background did not include musical training. Brain imaging scans

showed that different regions of the brain responded somewhat differently in people with musical backgrounds. An unexpected result was noted in the brain regions that became active during emotional responses to music. These points of activation were different from those previously observed. As the music increased in unpleasantness, an area on the right side of the brain important to emotion, the *parahippocampal gyrus*, became active. Correspondingly, “in brain regions thought to be involved in reward motivation, emotion, and arousal, including ventral striatum, midbrain, amygdala, orbitofrontal cortex, and ventral medial prefrontal cortex” (Blood, Zatorre, Bermudez, & Evans, p. 11818) when the music was perceived as pleasurable also became active. The researchers reported an important finding:

These brain structures are known to be active in response to other euphoria inducing stimuli, such as food, sex, and drugs of abuse. This finding links music with biologically relevant, survival-related stimuli via their common recruitment of brain circuitry involved in pleasure and reward. (Blood, Zatorre, Bermudez, & Evans, p. 11818)

Additional research that used positron emission tomography (PET) supported these findings (Blood & Zatorre, 2001). The PET scans showed the parts of the brain involved in processing emotion as lighting up with activity when the listener heard music. This particular study revealed that casual listening to music correspondingly caused an increase of activity in the brain’s right temporal lobe.

Ultimately these types of studies bring attention to the issue of dual-hemispheric processing, not only as it relates to musical training, but to listening to music as well. The above mentioned studies are just two of many that call attention to music’s effect on the listening experience. We also know that a

considerable amount of research suggests that music affects our neurological, psychological, and physical functioning in such areas as learning, language processing, emotional expression, memory, physiological, and motor responses. All these factors underscore the complexity of the cortical processing of music. These issues are given more attention and detail in the next section that focuses on brain laterality.

Neuroscience has had limited success in describing and understanding where, how, and why musical stimuli such as pitch, harmony, melody, rhythm, meter, timber, etc., are processed in the brain. It is theorized that existing perceptual, cognitive, and motor systems are functionally integrated in a way that gives rise to musical behavior; no centralized site in the brain deals specifically with music. It has been determined that the right hemisphere of the brain is involved with processing of musical pitch, control of sound intensity, identification of musical chords, melody perception in non-musicians, visual pattern recognition, singing, auditory pattern recognition, and expressive rhythmic and melodic behavior. The left hemisphere is involved with general music ability in musicians, including perception and production of speech, perception of rhythm and prosody, lyric performance during singing, and the temporal sequences of music-reading ability. Further, there is evidence of dual-hemispheric processing in musical training.

Relatively little has been explored concerning emotional response to sound and music. Research demonstrates that rhythm in and of itself can positively influence brain activity during learning. Expectancy theory (Meyer,

1956, 1967) intersecting with neuroscience seems to indicate that how music is processed neurologically may be tracked and then linked to what is needed by a patient to accelerate the healing process. Applying music prescriptively may in turn hasten recovery by considering dual-hemispheric processing as it relates to musical experiences. Perhaps the most significant finding of research to date is that it underscores the fact that cortical processing of music is extremely complex.

The Lateral Brain: Music and Emotion

This section briefly guides the reader through specific theories of emotional and musical response functioning. Contemporary affective neuroscience has focused on how the brain produces what is referred in the literature as negative affective reactions, such as pain itself or fear of stimuli that predict pain or fear through various kinds of stimuli, and these brain processes seem to be relatively well understood (LeDoux, 1996, 2000). Yet the cause of positive affective reaction is equally important for affective neuroscience and psychology (Panksepp, 1998). One view is that the right hemisphere is dominant over the left hemisphere for all forms of emotional expression and perception (Hellige, 1993). The valence hypothesis states that hemispheric asymmetry for expression and perception of emotions depends on emotional valence (Hellige, 1993); valence is the degree of attraction or aversion toward a specific object or event. One prevalent view in the literature is that the right hemisphere is dominant for negative emotions and the left hemisphere is dominant for positive emotions;

this view has received empirical support (Davidson, Schwartz, Saron, Bennet, & Goleman, 1979; Sackheim, Gur, & Saucy, 1978).

Specific patterns of emotion continue to be investigated psychologically and physiologically. Some theorists argue that each emotion is associated with a unique pattern of physiological changes. Studies have found consistent differentiation of valence of emotion in some physiological correlates of anger, fear, sadness, and happiness. For example, heart rate increases more in anger and fear conditions than in happiness. There is a strong differentiation of the valence of emotion by physiological changes (Ekman, Levenson, & Friesen, 1983). Proponents of this research argue that these patterns are the kinds of differences to be expected given the role of emotions in survival. For example, fear and anger involve increased heart rate because the organism is preparing to run away in the former case and fight in the latter case. The difference in blood pressure reflects the difference of behavior associated with each emotion; thus there is some evidence that autonomic differentiation for a small set of emotions does exist, although it does not seem to be necessary for the experience of emotion.

Although neural changes stimulated musically appear to affect a broad range of neurological structures, the overt behaviors, autonomic responses, and hormonal secretions that comprise emotion are controlled by separate neurological systems (Thaut, 1990). The amygdala appears to be the integrating mechanism for controlling these responses. The amygdala is one of the noted limbic structures responsible for the three components of emotion: behavioral, autonomic, and hormonal (Carlson, 1992).

To date, consensus *has not* been reached over exactly which structures comprise the limbic system. Most schematics consider it to consist of various parts of the cerebral cortex of each hemisphere, linked to a central core of structures lying below the cerebral cortex. The structures include the cingulate cortex, nucleus accumbus, hippocampus, parahippocampal cortex, rhinal cortex, and the amygdala. Although past research and ongoing investigations point to the amygdala as responsible for regulating emotion, a unified understanding of its functions has also not been reached yet (Shinnick-Gallagher, 2003; Zald, 2003).

There is considerable evidence that the right hemisphere is more involved in the perception of emotion than is the left, although there is also a suggestion that the left hemisphere does have some role in expressing and experiencing emotion (LeDoux, 2000). However, the extent to which either hemisphere is involved in emotion is yet to be determined. Interestingly, these studies parallel those in music psychology and neurosciences and along with future studies may bring more light to this subject. While many theories vie for attention, the laterality of emotion is far from being established in detail and continues to be investigated.

Keeping in mind the purpose of the current study, the reader's attention is drawn to a relevant point; that sadness and joy are neurologically related, (Berridge, 2003; Panksepp, Normansell, Herman, Bishop, & Crepeau, 1998). A theme more broadly found in the literature is that our sensations can be categorized as either positive or negative. Most sensations or feelings are described as having either a positive or a negative connotation, as they serve the

purpose of either encouraging or discouraging behavior. Positive or negative sensations encourage us to engage in adaptive cognition and behavior. While these emotions are processed in different hemispheres, the fact that they are neurologically related might be a key component of the neurophysiology involved in an emotional response to music. This particular area is of significant interest as it relates to emotion and lateral brain studies, and may serve to provide answers as research continues. Although significant work has been developed in the last decade in fields such as the psychology of music and psychoacoustics, progress in grounding these findings in neurology continues.

The Chills

Past studies on “the chills”

This section provides an overview of the research that has investigated the chills, as well as a detailed presentation of six primary studies (Blood & Zatorre, 2001; Blood, Zatorre, Bermudez & Evans, 1999; Goldstein, 1976, 1980; Krumhansl, 1997; Lowis, 2002; Panksepp, 1995) completed on this topic. Another study included (Panksepp & Bekkedal, 1997) though the primary investigation defined music as sound, and encompasses this particular type of response and phenomenon. Methodologies, assumptions, and conclusions are reviewed and presented.

The idea that experiencing emotion is concomitant with bodily sensations is a recurring theme in many areas of psychological research that is ongoing (LeDoux, 2000). Adding music as a variable increases the complexity of research

design and may explain why researchers outside the field of music therapy have been hesitant to enter this area and why there are relatively few studies at the crossroads of emotion, music, and psychology.

The sensation of arousal that is induced when listening to music has been referred to as the thrills, the chills, shivers-down-the-spine, or skin orgasm. Goldstein (1980) was the first researcher to focus specifically on this sensation, which was measured through self-reports on frequency, intensity, and duration. Goldstein investigated this sensation in relationship to the use of naloxone, an opiate antagonist. The purpose was to “to test whether or not endogenous opioid peptides play a role in this emotional response” (p. 1081). Goldstein’s study was designed to measure endorphins, naturally occurring substances in the brain that have a chemical structure similar to the narcotic of morphine.

The subjects were injected with naloxone, a drug that precludes the effects of endorphins. Another group of subjects were injected with a saline solution. Results demonstrated that the participants who were numbed to the endorphins were also less likely to experience physiological responses to music, suggesting that the phenomenon may be mediated by endorphins. Goldstein’s (1976) study was the first to advance the idea of a relationship between music, drug-like substances, and how they may interact to affect the brain. Goldstein (1976, 1980) also went on to emphasize the plausibility of involvement of the limbic system, and current neurological research seems to strongly point in this direction. As noted previously, the limbic system contains a large number of opiate receptors sensitive to the presence of endorphins. This may explain why music affects us in

such a profound emotional manner. Goldstein's study set the direction for future studies by calling attention to the question as to whether this phenomenon is evoked by any type of music or only by specific aspects of music. This first study also proposed how physiological responses might be measured for future studies.

Goldstein (1980) was the first to propose the term "the chills" or "the thrills" to describe the emotional or aesthetic response to music in a more specific manner. This term was proposed after participants identified it from a list as the most apt term to describe the response experienced. To date, a single descriptor for this phenomenon has not been adopted or used in a consistent manner. The lack of a common name has been a hindrance in terms of both literature review and questions of design study. This point will be given further attention in the methodology section.

The subject of this type of phenomenon has received minimal attention with relatively few studies investigating this specific type response to music. This lack of attention may be because the response itself is complex and not limited to a physiological response alone, but it would also seem to include the emotional response and the associations of the listener. What follows is an exploration of this concept and studies subsequent to Goldstein's study that is primarily concerned with this phenomenon in association with music.

Many studies of human responses to music conducted from various perspectives are concerned with how music affects the physiological response (Abeles & Chung, 1996; Aldridge, 1994; Hodges, 1999). This type of research

has focused on how music produces specific bodily changes, rather than the effect of bodily states on the emotional experience with music.

In a meta-analysis, Bartlett (1999) summarized research studies relating to physiological responses to music carried out over the past century. In that summary, Bartlett discussed this sensation as a physiological phenomenon and called attention to music's effects on the autonomic nervous system. These effects include: heart or pulse rate; skin conductivity; respiration; blood pressure; muscular tension; motor activity; motor-postural studies; finger or peripheral skin temperature studies; blood volume studies; stomach contraction studies; and biochemical studies. Bartlett examined whether the measurable effect on human beings could be used to evaluate how music may activate and alter the human response; concluding that music and sound stimuli influence bodily systems. This is relevant to the current study in that it supports my decision to use self-report rather than repeating something that has previously been demonstrated.

Certain qualities of music tend to produce this particular response, and point towards a possible pattern deserving further investigation (Goldstein, 1980; Krumhansl, 1997; Panksepp, 1995). The phenomenon appears to occur more often when listening to music that is characterized as sad rather than happy, or familiar rather than unknown. Intense passages, such as loud, rhythmic crescendos, are more often evocative of this particular sensation. Women, more often than men, experience this phenomenon more readily (Panksepp & Bekkedal, 1997), and women report feeling more active physical responses to music than males. Panksepp also suggested that "females are emotionally more responsive or

perceptually attuned to sadness in music than males” (1995, p. 189). On the other hand, Panksepp suggested that males may be more selectively attuned to happiness in music than are females. As it stands, a definitive conclusion on these findings has yet to be reached. Additionally, feelings of sadness—which produces this particular response—have been tied to the loss of social bonds (Berridge, 2003). Research has suggested that the feelings of comfort and safety associated with social bonding are also produced by opiates. The question arises as to whether there are neurochemical similarities between the responses evoked by music and those engendered by social loss. While this association is suggested, research has not yet confirmed the existence or nature of the relationship.

Other evidence links this sensation as a response to sound itself, specifically and more directly to the limbic system (Davidson & Fox, 1989). To evaluate this idea, Panksepp, Normansell, Herman, Bishop, and Crepeau (1988) demonstrated that this particular sensation response could be evoked by parents’ concern with their baby’s crying. This study makes evident that parents react more strongly to the familiar cry of their own baby than they do to the cry of an unknown baby. Human separation calls, sounds that are produced in response to a child being separated from the mother, have properties related to peak experience as elicited by music. For example, researchers (Panksepp & Bekkedal, 1997) were able to evoke the sensation response in parents by playing recordings of their infant’s cries. Long before the development of language, genetic processing seems to have designed the brain to offer ample rewards to ensure attentiveness to the call of infants. This investigation suggests just one example of how music may

play a notable role in the evolutionary process. Peretz (2001) emphasized the point further by stating; “The fact that infants are particularly responsive to the emotional messages of music directed toward them suggests an adaptive value of maternal singing. Mother-infant emotional communication is crucial to survival” (p. 8).

John Sloboda (1991), a professor of psychology at Keele University, approaches the research in a decidedly different manner by defining musical affect in more behavioral terms. Based on the theories of Meyer (1956, 1967) and Frijda (1986), Sloboda not only investigated emotional response to music, but also placed an emphasis on the theoretical approach to emotion in terms of confirmations and violations of expectancy. According to Sloboda, intense emotional experiences can be evoked with music functioning as a catalyst, a characteristic often witnessed and used in music therapy practice.

Sloboda (1991) surveyed a group of individuals who identified as professional, amateur musicians, and nonperforming music listeners. Dividing them along the lines of musical training, the aim of the study was to learn the frequency that respondents experienced sensations while listening to music from a list of physical responses. The sensations that respondents experienced in order of their frequency were: shivers-down-the-spine, laughter, lumps in the throat, tears, goose pimples, racing heart, yawning, and pit of the stomach sensation. Four other responses—flushing, sweating, trembling, and sexual arousal—were included in the questionnaire, but results indicate that music did not evoke these particular responses. My current research study did use the primary preexisting terms to

help describe the phenomenon; however, more leeway was given to participants to describe the phenomenon on their own terms. Terms from previous studies were used only to compare and contrast where instances were similar or where instances were not similar with the current dissertation project. This subject is given further attention in Chapter 4: Methodology.

Sloboda's study (1991) reported that 83 music listeners completed a questionnaire providing information about the occurrence of a range of physical reactions while listening to music. The respondents were also asked to locate specific musical passages that reliably evoked such responses. A structural analysis of these passages, provided by Sloboda, illustrated that tears were most reliably evoked by passages containing sequences and appoggiaturas. Also noted were shivers-down-the-spine occurred most often with the chills, and were reliably evoked by passages containing new or unexpected harmonies.

Four years later, Panksepp (1995) contributed to this area of research by examining this phenomenon extensively. Panksepp's investigative purpose was to analyze the connections between music and emotion through objective body and brain indicators for specific types of emotional experiences. Panksepp presented clear evidence that the stronger the emotional content of a piece of music, the more likely one is to experience the chill sensation or shivers-down-the-spine. This study also reveals that reactions more often occur when music evokes feelings of sadness. This finding confirmed previous studies and also shed light on the factors of familiarity, preference, and self-selection of music. These factors are now established as common variables in producing this type of response.

Physiologically speaking, Panksepp's findings also concur with previous studies that this response most often originates in the neck area. Although there is speculation that the autonomic nervous system (Bartlett, 1999; Hellige, 1984) or the limbic system (see the section Neuroscience and the Biological Basis of Music Perception) may be involved, the origin of this feeling has yet to be pinpointed and brain mapping has yet to be accomplished.

Krumhansl (1997), a professor at Cornell University, further explored the relationship of music to emotional responses by measuring physiological events occurring when this phenomenon was activated. Participants in this particular study listened to music that had been independently categorized as one of three moods: happy, sad, or fearful. Instead of self-selected music, six excerpts from pieces of classical music generally expected to induce specific emotional states were chosen. The excerpts were rated by an independent set of judges. The objective was to measure more physiological responses than had previously been evaluated, and to determine if the overall patterns of responses varied in their emotional reactions. To meet this goal, 12 different actions of the autonomic nervous system (non-conscious, non-intentional) were used. Results revealed that the directions of change were the same for all three emotions. Heart rate decreased, blood pressure increased, rate of breathing increased, and skin temperature decreased.

Results of Krumhansl's (1997) study confirmed and extended previous findings, indicating that the adjectives used to describe this response were consistently assigned to emotions evoked by the music. These findings also

indicated that various emotions cannot be separated by physiological responses. They also reinforced previous findings related to the parameters among music, emotions, and physiological responses. The implications of Krumhansl's findings as they affect this dissertation are that Krumhansl went further in scrutinizing the quality and direction of the changes and distinct patterns became clear. A state of happiness or well-being seemed to involve the largest changes in respiration. Responses of sadness seemed to involve the greatest changes in heart rate, blood pressure, and skin temperature; and fear was associated with maximal changes in the rate of blood flow. Krumhansl's findings suggest that emotional reactions produced by music correlate as they are described by the participant, not just an emotion being described or observed. This agrees with and amplifies the findings of Juslin (1997b, 1997a), which were later supported by Gabrielsson (2001-2002). This finding also reinforces the idea that music does not simply convey intended emotions that are recognizable, but instead influences genuine emotions already present in the listener. Together, this group of studies, provide confirmation of Meyer's (1956, 1967) theories as well.

Continuing research into this phenomenon demonstrated increasing complexity of cerebral responses to music by focusing on the neural mechanisms underlying the emotional aspects of response to music. For instance, a team of researchers—Blood, Zatorre, Bermudez, and Evans (1999)—used positron emission tomography (PET) to investigate physiological responses to music. PET recorded cerebral blood flow changes in response to self-selected music that elicited reported peak experiences. Subjective reports of this response were

accompanied by changes in heart rate, electromyogram, and respiration. As the intensity of the response increases, cerebral blood flow increases were also observed in the ventral striatum, the nucleus accumbens in particular, the midbrain, and the orbitofrontal cortex. Corresponding decreases were observed in the amygdala and the ventral medial prefrontal cortex.

Corroborating this phenomenon, Blood and Zatorre (2001) argued that reward and motivation systems are present in musical emotional response, despite the widely held view that music has no direct biological survival value. Their study called for increased attention to the limbic system, which is widely viewed as implicated in playing an important role in terms of survival value. What is different, though not necessarily new, is that this may also serve as a framework for the human response to music. “Activation of these brain systems in response to a stimulus as abstract as music may represent an emergent property of the complexity of human cognition” (p. 11823).

Blood and Zatorre’s (2001) findings present a clear relationship between music’s emotional impact and the affected levels of hormones. These include cortisol, testosterone, and oxytocin and trigger the release of the natural opiates of endorphins. The brain region affected—the limbic system—is the same one that comprises the pleasure center. This supports the idea that music is capable of stimulating this particular type of emotional response. As mentioned earlier, the limbic system is active in response to other pleasure-inducing stimuli, such as food, sex, and mood altering drugs (Roederer, 1985). Difficulties and challenges remain for advancing this type of research. With so few studies having been

conducted examining this particular response to music, the phenomenon remains not completely identified or appreciated, and may be a reflection that the experience itself has not been fully described.

Abraham Maslow: Peak experience as elicited by music.

This section will be a brief overview of Abraham Maslow's theories (1954, 1968) by focusing on later research into peak experiences. Maslow, an American psychologist, recognized that music was exceptionally important for peak experience, and researchers have enthusiastically investigated the peak experience phenomenon since then. However, using music as a catalyst of peak experience has only recently been included in a small number of studies in the field of psychology. In alignment with Maslow's ideas, the Tellegen Absorption Scale (2006) has become available and is used in this current study as part of the selection process criteria.

Maslow suggested that peak experience not only involves affective states, but also contain a positive or noetic element. It may be that by using Maslow's ideas about peak experience to broaden and include "the chills," possibly a peak experience unto itself, a fuller description of the phenomenon may occur.

Maslow (1954) posited a motivation theory referred to as the "hierarchy of needs." This hierarchy, usually depicted as a pyramid with five distinct levels, describes a progression of psychological growth towards self-actualization. As the lower level of needs is satisfied, a person is then motivated to seek and progress to higher levels. The lower level consists of physiological needs for such basics as

food, water, air, and sleep. Once these needs are met, according to this theory, the person may then begin to be motivated by the second level, which involves safety and security. The third level includes the need for social interaction, affection, and a feeling of belonging. The fourth level involves two different aspects of self-esteem—recognition by the self and by others. The fifth level is referred to as self-actualization.

Maslow (1962) described self-actualization as a psychological process and used the term “peak experience” to refer to a moment that carries its own intrinsic value. Peak experience, “could originate from events such as great moments of love and sex, bursts of creativeness, moments of discovery, natural childbirth” (p. 10). Maslow took the position that peak experience was not only empirical, but self-validating as well (1968).

In the field of psychology, it was a considerable amount of time before following up with music as a catalyst, however it was done through a survey and was based primarily on participant recall. Lowis (2002) followed Maslow’s (1968) ideas about peak experiences as elicited with music, and surveyed 102 participants about their background with music and an emphasis on music training and their emotional responses to music. Lowis borrowed the term “peak-experience” to describe the response. A significant outcome showed that 93% of participants in the survey reported a peak experience while frequently citing the antecedent of music as triggering a physiological and emotional response (Lowis, 2002).

Lowis (2002) summarized the evidence and paid special attention to musical training, as was done in the previously noted studies. Musicianship has been referred to repeatedly (Lowis & Hughes, 1997; Panksepp, 1995; Sloboda, 1991), and Lowis emphasized this in the design of this particular study. Lowis noted the plausibility of a significant correlation between active musical involvement, such as playing an instrument or musical training, and the incidences of peak experience reported by the participants. Lowis remarked on the difficulty this posed in generalizing the findings, as was the case with Sloboda (1991). Given the previous information on brain lateralization and function, it seems possible to infer that the dual-hemispheric process occurring with trained musicians versus non-musicians may impact the results.

The Lowis (2002) survey points to a particular personality type of people who are able to fully immerse themselves in experience. This personality type is expressly similar to the one noted earlier by Bonny and Pahnke (1972) in LSD psychotherapy as the trait of absorption, identified by Maslow (1962) and measured by the Tellegen Absorption Scale (2006). *Absorption* is defined as the capacity for total involvement in imaginative activities (Radtke & Stam, 1987). Davidson, Schwartz, Saron, Bennet, and Goleman (1979) found that those who meditate showed decreased autonomic arousal levels and increased cortical responsiveness, which, as previously noted, is a part of the physiological characteristics of peak experience as elicited by music. Participants with an average to high score on the trait of absorption also demonstrated the ability to immerse themselves in their current experience to the exclusion of everything

else; they were able to appreciate great moments of beauty, or aesthetic events such as music. Participants with an average to high score were also prone to peak experience, most remarkably, in association with music. Absorption has been found to correlate with musical enjoyment, and linked with a personal, cognitive, or emotional involvement with music (Roche & McConkey, 1990).

For this current dissertation, the Tellegen Absorption Scale (2006) has been used as a part of the criteria involved for selecting participants. It is important for the participants to be able to not only immerse themselves in the experience, but to also identify and articulate accurately their responses. The TAS is a measure of the ability of an individual to absorb and correlates with the ability to enter into the peak experience. This dissertation purposively selected participants who scored on the high end of TAS. The trait of absorption is discussed in more detail and how it applies to this current study in Chapter 3: Methodology.

Integrative Summary

There are a number of topics to consider when evaluating the research discussed earlier. A majority of past studies have focused mainly on the physiological variables related to response(s) to music; this is a limitation that omits a core aspect of the human experience—the affective experience of the listener. Furthermore, there is considerable variation from one study to another relative to a definition of the peak experience as elicited by music and some of the terminology, types and number of participants, types of instruments,

methodological procedures and understanding the significance of peak experience itself.

Familiarity with the music selected seems often necessary to produce this type of phenomenological response. The challenge is found in selecting specific pieces of music for their emotional qualities (Panksepp & Bekkedal, 1997) as well as the subjective nature in determining those qualities. One difficulty is that affective variables will be confounded with a host of other variables related to the non-affective qualities of the pieces selected. In Panksepp and Bekkedal's (1997) study, participants self-selected two pieces of music and wrote or discussed the significance and personal meaning about each piece of music. This researcher believes that these factors are part of what may define the nature of the relationship an individual has with a piece of music. Although these factors are quite complex, exploring them offers an opportunity to more fully capture and describe both the listener's perspective and the phenomenon itself. Other researchers, such as Bartlett (1999), noted that a major weakness in previous research designs used is that there is little control, if any, across all these studies over the type of music being used. What seems to have developed over time in the studies reviewed is that self-selected music is utilized and is an approach used in the design of the present study. These methods will be discussed in greater detail in Chapter 3.

This literature review reveals that minimal attention has been paid to the personal memories that arise when listening to music. This was given some attention recently by Lewis (2002), who measured the trait of absorption to

identify specific personality types prone to experiencing this type of sensation. Because this is an area of importance and provides a meaningful area for exploration, Lewis's study calls attention to the memories evoked and intertwined with the associations of the listener. By using an approach that can include more of the participant's associations and meanings, a meaningful description of the phenomenon may occur.

In the field of psychology the question of music's influence has, in the past, been given minimal attention. It seems that the question now is not whether music can have an influence, but rather what type of music is effective, for whom, and under what conditions.

Unresolved Issues

While peak experiences have been investigated, peak experience with music as a catalyst in all its many aspects has not been fully described. Difficulties and challenges remain for research investigating peak experience as elicited by music. The phenomenon itself remains not fully identified or appreciated, and there are other possible processes involved not yet revealed. This may also simply be a reflection that the experience itself has not been fully described. Also noted often is that responses to music are highly subjective and individualistic which makes research progress more difficult. At first glance, the premise of using self-reported responses might seem to complicate matters, by looking for objective facts in the most subjective of places. However, a specific

contribution of this project will be to provide a meaningful description of how the phenomenon of peak experience is perceived.

A review of the literature shows the lexicon evolving in a variety of ways. Quite some time ago, Panksepp (1995) cited the need for a single descriptor, and suggested “skin orgasm,” however, to date a single descriptor has yet to be agreed upon. This has been problematic especially in the ability to identify and include all the studies for this review. Other challenges are found in the way to communicate this sensation to investigators, participants and readers, a factor that this current study takes into consideration. For instance, the participants were encouraged to use their own terms when describing the experience. Although this may have added more descriptors to the lexicon, it allowed participants to more fully and accurately describe their own internal experience. More recently, the Lowis (2002) study used Maslow’s term “peak experience” to identify the phenomenon as a response to music. However, the Lowis study does not describe the experience in full. Using questionnaires and basing it on participant recall were some of the limitations. Another missing feature from most, if not all of the cited studies, was that of not using other disciplines researching this same phenomenon, something this researcher believes strongly must be taken more into account as a truly multidisciplinary and integrated approach to research.

Studies investigating the influence of musical parameters on emotional expression have gathered and analyzed data using a variety of techniques. Some of these measured physiological correlates of emotion in the hope of finding evidence for a direct relationship between the state of a particular musical

parameter and emotion evocation. Previous investigations into responses to music have framed the experience in a narrow physiological way, but over time more recent studies have expanded to include emotional responses as well. A specific contribution of this dissertation will be to provide a fuller description, in part, due to the inclusion of emotional responses.

The Research Question

Some humanistic writers in psychology, notably Maslow (1968) and music therapist Bonny (Bonny & Savary, 1997) have demonstrated the inherent capacity of human beings for achieving positive growth in relation to music. It is this potential for self-actualization that is at the heart of the research question of the current study: “What are the emotional, psychological, and other possible responses that occur during a peak experience as elicited by music?”

To the degree that it provides answers to this question, the current study will contribute to existing knowledge of an important human response to music that has not often been studied. It will do this by providing meaningful descriptions of peak experiences elicited by music that will document the lived reality of 21 participants, thus broadening the foundational information for future research.

Chapter 3

Research Method and Design

This chapter describes the overall research design, the role of the researcher, a brief description of how the participants were selected and settings, the interview process, procedures for data collection and protocols for coding and the interrater process including data analysis.

A qualitative approach was used to research the topic of peak experience elicited by music as it is better suited to exploring and documenting participants' psycho-emotional experience of music. Strauss and Corbin (1998) identified the following skills and qualities as those most important in a qualitative researcher: (a) objectivity and the capacity to critically analyze circumstances and data; (b) ability to recognize the tendency toward bias; (c) flexibility and openness towards constructive criticism; (d) sensitivity to the words and behaviors of participants; and (e) a sense of absorption and devotion to the process.

Research Design

The basic design here is a case study conducted through structured interviews and textual analysis to gather meaningful descriptions from selected individuals of how they perceived a peak experience as elicited by music. The process involved a pre-screening scale to identify appropriate individuals; a demographic questionnaire that also questioned participants about previous instances of peak experiences; a set of interview questions that were flexibly asked prior to, during, and after the music listening experience; a follow up set of

questions; use of Nvivo 8 database (QSR International Software, 2008) for extensive coding; a hybrid of prior-research and data-driven thematic analysis; and use of 3 interraters to enhance validity.

Thirty-five individuals were invited to voluntarily participate in this research study with the intention of having a final group of 30 participants. The final number in this study was 21 adult participants from the general population between the ages of 21 and 65 from a variety of cultural, ethnic, and racial backgrounds.

The volunteer participants were treated in accordance with the *Ethical Principles of Psychologists and Code of Conduct* (American Psychological Association, 2002). For sample copies of the informed consent form, Bill of Rights for Participants in Psychological Research, and Confidentiality Statement, see Appendix C.

The Tellegen Absorption Scale: Personal Interests and Experiences (2006) (see Appendix D) was used as a tool in selecting appropriate participants. This scale measures “absorption,” or the “capacity for total involvement in imaginative activities” (Radtke & Stam, 1987). Participants with a higher score on the trait of absorption demonstrated the capacity to more fully immerse themselves in their experience as well as to be more susceptible to peak experiences particularly in association with music (Roche & McConkey, 1990).

The TAS (2006) has been demonstrated to reveal an individual’s capacity to assimilate and incorporate self-altering experiences using empirical measurements. Absorption is key in the ability to enter into an altered state of

consciousness. For example, the trait of absorption may correlate to the ability of the person entering a peak experience. TAS has been found to be a highly reliable tool with a reported internal reliability of .88 (Radtke & Stam, 1987), and obtained a 30-day test-retest reliability of .91 (Roche & McConkey, 1990). The TAS measures the extent that the individual can (a) respond to engaging stimuli, (b) respond to inductive stimuli, (c) have the capacity to think in images, (d) summon vivid and suggestive images, (e) have cross-modal experiences (such as synaesthesia), (f) become absorbed in his or her own thoughts and imaginings, (g) can vividly experience the past, (h) have episodes of expanded awareness, and (i) experience altered states of consciousness (Roche & McConkey, 1990). These characteristics enhance the reporting of peak experience and emotional responses to music.

The TAS comprises 34 items and has a 5-point Likert response scale with options ranging from "strongly agree" to "strongly disagree"; it is scored 1-5 five respectively. Although it is widely accepted that the TAS provides a measure of overall capacity for trait absorption, the items, being true or false statements, fail to discriminate frequency of occurrence or how easily individuals experience absorption as a state. In other words, when answering "true" to a given item, no indication is made as to whether this happened once in a lifetime or everyday. Furthermore, it is not possible to ascertain whether a participant finds it easy or difficult to access the phenomena represented by a given TAS item. Thus, two absorption high-scorers may be, in fact, quite different both in their rate of absorptive participation and in their innate abilities. What was expected was that

the subjective experience of the participant would be accountable with this format in the Personal Questionnaire. In this study, the TAS scores were only used for criteria selection of individuals expressing an interest in participating.

In order to collect data about peak experience, individuals were asked to complete a Personal Questionnaire (see Appendix E). The aim was to gather as many details as possible about participants' familiarity and understanding of peak experiences. The questions were gleaned from significant studies on the phenomenon of peak experience as elicited by music (Goldstein, 1980; Krumhansl, 1997; Lewis, 2002; Panksepp, 1995; Sloboda, 1991). The PQ was developed using a combination of the questionnaires from the aforementioned studies. This researcher modified and added to these tools of inquiry in order to deepen our understanding of the unique type of emotional peak experience using music as a catalyst. The purpose of these modifications was to study and clarify the consistency, intensity, and quality of the responses as reported by the participants. This should address the issue of discerning the listener's perception of emotional expression in music with that of emotions evoked in the listener. Following the design of more recent studies, the choice for this study was to continue using music that was self-selected by the participant and demonstrated the capacity to evoke psychological response or peak experience. This placed a greater emphasis on familiarity and past associations.

While some interview questions were based on previous studies some questions were specifically designed for the present study to elicit meaningful participant descriptions. I made modifications and additions in these questions for

several reasons. One was to improve the consistency, intensity, and quality of the reported responses; another was to probe more deeply into the unique emotional experience of the phenomenon itself along with the role that music may play.

Also, these changes address an issue that has been a challenge in previous studies—that of discriminating between the listener’s perception of emotional expression *in the music* and the personal, internal emotions evoked *in the listener*.

The interview questions, which were addressed either prior, during or after the music listening experience, were:

1. Please describe your experiences such as feelings, sensations, memories, thoughts, etc. that occur while listening to this piece of music.
2. In what part of the body do you typically get these sensations? If they spread to the rest of your body, how so?
3. Please indicate the emotion that best describes the feelings you felt during the listening experience.
4. How many times did you experience this reaction during this particular listening experience? Is it different today than at other times when listening to this music?
5. Please indicate the emotion that best describes the feeling of the song itself, even if it is different than what you felt while listening.
6. Do these memories, feelings, and sensation occur at other times?
7. Is there anything else you would like to say about the music listening and your emotional response that you have not mentioned before?
8. How important is music in your life? (Please circle one)
Not at all, very little, average, a great deal, very
9. On average how many hours per week do you spend listening to music?
(Please circle one)
Less than 1 hour About 2 hours About 3 hours
About 4 hours About 5 hours About 6 hours

10. Do you have any past or current history concerning any type of alcohol or drug use that you are willing to share? (A reminder here that this information is for the purposes of this study and that all information is confidential).

Description of Participants and Setting

The sample of interest consisted of a convenience sample of 21 adults between the ages of 21 and 65 taken randomly from the general population. The initial survey size was targeted at 35 subjects, but for various reasons (including schedule accommodation and the decision not to participate) 21 interviews were completed. The participants are introduced to the reader with more detail in Chapter 4. Participants in this study are healthcare clinicians of various disciplines, students studying psychology, and other adults. The sample included all male and female participants of varying cultural, ethnic, racial background, and sexual orientation.

Cultural considerations have been noted, accommodated, and described as they arose in any individual case. As an example, one of the participants was a Latino male, and music has somewhat different connotations in the Latino culture in that it is a significant and integral part of daily life in contrast to other cultures. This participant chose songs that were in Spanish, and our conversation was in Spanish (the participant's first and native language); it was later transcribed into English. Word meanings and nuances can be different in Spanish than in English, so I questioned the participant in detail about specific words post-interview to assure accuracy. A different participant disclosed that because he self-identifies as gay, it would have been difficult for him to disclose intimate details of his music

listening experiences to a heterosexual male, and that if the researcher had been a female his comfort level in being fully forthcoming might have been negatively affected.

Sample subjects were recruited from the Portland, Oregon area—local Oregon universities, Portland community clinics involved in treatment of mental health or addiction, and some random recruitment of the general population. A method of tracking the number of potential subjects has been kept for the purposes of comparing the actual number of participants with those who were screened out.

The Interview Process

The first step of the interview process involves this writer sitting with the participants and listening to two pieces of their chosen music. A tape recording captured any pre-interview questions, an induction to create a mood for purposeful listening, the listening experience itself, and any post-interview. This writer kept a journal for making notes of any observations, thoughts or ideas that may have occurred but were not captured on the tape. A clarification about the induction process is that my music therapy training assisted in preparation for providing an induction. It is important to be aware of the type of music selected and the current mood of the listener. If the music is more reflective and calming in nature providing a meditative induction is indicated. However, if the mood of the listener or the genre of music is contraindicated then a quiet induction would not have been used. When these factors are not aligned properly; mood, music,

comfort level, they may most likely be a barrier for the listener to enter fully into the music experience.

The second step of the interview process would be a post-session interview (see Appendix F). These questions were asked if the participant did not answer said questions during the listening session in order to provide consistent data across all listening sessions and participants.

Data Analysis

Data analysis combined the use of Boyatzis' (1998) protocol for thematic analysis with the use of Nvivo 8 program (QSR International Software, 2008) for data management and theme coding. The 21 interview transcripts were coded using Boyatzis' data-driven qualitative thematic analysis method.

Coding was done by this researcher and a team of three interraters following Boyatzis' guidelines. Boyatzis (1998) said,

Thematic analysis is a process for encoding qualitative information. The encoding requires an explicit "code." This may be a list of themes; a complex model with themes, indicators, and qualifications that are causally related; or something between these two forms. A theme is a pattern found in the information that at a minimum describes and organizes the possible observations and at a maximum interprets aspects of the phenomenon. (p. 4)

More details on the coding process using interraters are given in the next section.

This system facilitated identification of themes and codable moments, consistent codification, development of a code to process and capture the essence of peak experiences, and interpretation of the data for a meaningful portrayal of these experiences.

This system involved analyzing the content of the interviews to identify attributes or recurring themes by reading and carefully categorizing, extracting, and identifying any significant words or themes that would best capture and describe a peak experience as elicited by music or the resultant emotional or psychological responses.

The thematic analysis process begins by rereading the source text to get an overall sense of the data. Then, as I did in this study, one can use a thematic analysis program such as Nvivo 8 (QSR International Software, 2008) to code a comprehensive list of “source text elements”—identifiable words, phrases, or concepts that occur regularly enough to warrant referencing. Once these irreducible elements of data are identified and characterized, they become the primary building blocks of more abstract thematic categories; they constitute the lowest level of textual analysis. Once the more obvious themes have been generated, the researcher looks for less apparent, subtler themes.

The next level of data abstraction requires (a) that themes be developed beyond the overt level to come up with implicit, abstract themes, and (b) that these themes be coded. At this point, codes are given specific definitions. According to Boyatzis’ (1998), a good thematic code is characterized by five elements:

1. A label or name,
2. A definition of what the theme concerns,
3. A description of how to know when the theme occurs (how to “flag” the theme),

4. A description of any qualifications or exclusions to the identification of the theme), and
5. Both positive and negative examples in order to eliminate possible confusion when looking for the theme.

The first step in the present study was to record and analyze the subjects' emotional and physical responses to the piece of music selected. Information gathering at this initial stage was subject to manifest content analysis as described by Boyatzis (1998) and was especially useful with the underlying aspects of the phenomenon, peak-experience as elicited by music, to obtain a fuller description. As an example of this, I noted when a word or phrase was used more than once (by one or more participants); when it was used a minimum of eight times, I considered it significant.

Initially interview transcripts were reviewed by the primary researcher to assess for completeness and audio quality control. This was done to assure consistency in that the same interview questions were asked of every individual. Information from the interviews transcribed was entered into a database and onto a final data collection sheet. All statements directly related to the peak experience and any other data were recorded and coded. For this study, a code was defined as a word, or set of words, that described the participants' perspectives and responses to the experience while listening to music.

Another step in the process was to analyze the data contained within the Personal Questionnaire packets, the pre-interviews, and the post interviews. Cross-checking was performed to ensure that duplication did not occur. Answers to the questions were considered "verbatim quotations with sufficient context to

be interpretable” (Patton, 2002, p. 4). These sources were integrated as part of the phenomenological experience that had been described by the participants.

Working from the researcher’s field journal, consistent meanings and themes within the questionnaires were documented. The researcher was able to make notes about behaviors not commented on or spoken about during the listening experience, and provided an opportunity for further discussion of the experience. Working from the researcher’s field journal and the questionnaires, consistent meanings and themes were organized into a planning and systems thinking to identify patterns into a usable coding system (Boyatzis, 1998).

Coding and the interrater procedure.

In the next step, multiple coders or interraters participated in the analyzing of the data. In addition to this author, the team included a 55-year-old Caucasian female with a degree in social work and licensed in the state of Oregon; a 53-year-old Caucasian male with a masters degree in counseling psychology who is licensed in California; and a 55-year-old Caucasian female with a degree in business in human resources. The purpose of using the team was to provide a number of ways to analyze and interpret the data for this research project and to eliminate as much personal bias as possible. The conversation that takes place between the judges and the agreements reached are affected by, “the influence skills, the mutual trust, interpersonal skills, and the cognitive styles” of each individual (Boyatzis, 1998, p. 151).

All transcripts were imported into Nvivo 8 database (QSR International Software, 2008) for extensive coding and data management. Initially, codes from prior research began the coding process, the preliminary inductive codes were generated from the raw transcript data, and then substantial data-driven codes were developed based on the interview transcripts. Boyatzis (1998) suggested three methods of thematic analysis: data-driven, theory-driven, and prior-research driven. Data-driven analysis could be considered a pure form of thematic analysis, where new codes emerge from the data; it is especially useful when a topic has not been explored using thematic analysis. Theory-driven and prior-research driven differ from data-driven in the sense that codes build upon preexisting work. Theoretical models inform theory-driven analysis, and the researcher identifies, describes, and labels new code structures. The prior-research driven method of thematic analysis, as described by Boyatzis, occurs when a researcher replicates, extends, or refutes the work of prior studies.

In the current study the codes were developed based on both the prior-research driven and data-driven approaches in an effort to address issues from previous studies as well as to remain open to new data. The new code I developed was designed specifically to place strong emphasis on participants' descriptions.

In order to attenuate researcher bias and provide multiple perspectives on the data and its interpretation, in addition to the researcher, 3 other coders participated in analyzing the data. (Full instructions to interraters for coding can be found in Appendix G.) The coding procedure involves bracketing—or becoming aware of individual preconceptions, which is intended to eliminate as

many biases (relative to assumptions and beliefs about personality, society, culture, etc.) as possible. To accomplish this, we discussed our personal viewpoints with each other so that we could help each other avoid interpretive bias as we coded the transcripts. We also discussed the research question in some detail in order to come to a common understanding of what the question meant, and any other questions that arose during the process. All coders read and re-read the transcripts to become very familiar with the material.

When we met after these readings, we began coding using an unstructured method called open coding—developing the coding scheme as we worked. That is, we allowed the data categories and themes to emerge from the data, highlighting phrases, sentences, and whole utterances that seemed to speak to the research questions. Going through the transcripts line by line, we developed a common sense of what to code. The final step in the process was to read back through the transcripts and make sure that codes had been applied in a consistent way across transcripts.

Next was category coding, which is not altogether separate from the open coding process. During open coding, the coders began to notice groups of codes that appeared to belong together into one category or kind of code. We noted these relationships in marginal notes or memos. Then, the open codes that appeared to fall into common categories were grouped together under higher order category codes. Codes were deemed significant (worthy of being categorized into a higher order category) if they were repeated at least eight times in the 21 transcripts.

Table 1 presents the 22 data categories generated from the data (from which the nine primary themes were gleaned). In Table 1 the data categories identified as #1-18 were garnered from the previous studies, and #19-22 from the current study. The number of participants who identified each type of experience is noted, as is the number of times the particular category was reported and coded. [Note that this latter number includes a temporal aspect—i.e., it reflects the three opportunities each participant had to report: pre-interview, in vivo, and post-interview. So the data analysis documents the differentiation between past recall of events (pre-interview), live recall (in vivo), and reflection on the listening session (post-interview). The limitations of this particular way of coding are addressed in the limitations section.]

Table 2 reflects an example of the next step of coding, which involved further sorting and coding of each category; this table gives a more detailed breakdown of one of the categories seen in Table 1—Sensation Responses In-Vivo.

Table 3 is a further differentiation between those aspects of Sensation Responses identified in Table 2 that occurred in vivo and those that were self-reported during the pre-interview or post-listening.

Table 1

Data Categories Identified by Number of Participants and Number of Reported Instances

	<i>Data Categories</i>	<i># Participants</i>	<i># of Reported Instances</i>
1	Participant Demographics	21	11
2	Song Choice	40	86
3	Sensation Responses–In Vivo	30	230
4	Sensation Responses–Pre-Interview and Post-Listening	25	50
5	Time Spent Listening to Music	21	33
6	Importance of Music	21	31
7	Relationship to/or Use of Music	21	48
8	History of Alcohol or Substances - Links to Music	19	25
9	Prior Peak Experiences	21	25
10	Emotional Descriptor of Music	27	59
11	Music Training	21	21
12	Years of Music Training	18	18
13	Tellegen Absorption Scale Score	21	21
14	Intensity of Peak Experiences [Top 3 choices from TAS]	21	21
15	Prior Responses to Selected Music	17	37
16	Area of the Body Where Sensation(s) Occurred	24	69

Table 1 (continued)

Data Categories Identified by Number of Participants and Number of Reported Instances

	<i>Data Categories</i>	<i># of Participants</i>	<i># of Reported Instances</i>
17	Number of Responses [Comments about differences]	34	58
18	Post-Interview Comments	12	17
19	Facilitating a Union of Opposite Emotions	14	33
20	Yearning for Resolution	16	43
21	Observation Alters Experience	18	41
22	Spirituality	4	14

(Table created by author.)

Table 2

Sensation Responses In-Vivo [Breakdown of Data Category #3]

	<i>Aspects of Sensation Responses</i>	<i># of Participants</i>	<i># of Reported Instances</i>
1	Physiological Responses	19	93
2	Enhanced Memory Recall	16	45
3	Emotional Response	27	80
4	Facilitating Access to Feelings	25	110
5	Inspired Creativity	10	16
6	Anticipation of Expected Responses	12	30

(Table created by Author.)

Table 3

Sensation Responses Pre-Interview or Post-Listening [Breakdown of Data

Category #3]

	<i>Aspects of Sensation Responses</i>	<i># of Participants</i>	<i># of Reported Instances</i>
1	Physiological Responses	6	10
2	Enhanced Memory Recall	9	13
3	Emotional Recall	6	9
4	Facilitating Access to Feelings	11	16
5	Inspired Creativity	5	6
6	Anticipation of Expected Responses	3	3

(Table created by author.)

The hoped for end point of this coding process was to find answers to the research questions in the resulting categories. The codes and categories gleaned from the coding process were then used to describe a peak experience as elicited by music. The most frequently occurring codes were identified and a determination made as to the number of times these codes occurred in all the transcripts. That is, the frequency and distribution of codes and categories is one outcome. The final step—data reduction and data display—was completed by this investigator.

Reliability and Validity

Reliability is concerned with the accuracy of the actual measuring instrument or procedure. Validity is concerned with the study's success and refers to the degree that the study can accurately reflect or assess the specific concept being investigated. Converting data categories into codes and then counting frequency, presence, or intensity is not sufficient. A number of steps were also taken to preclude researcher bias. Reliability and validity has been addressed using techniques suggested by Boyatzis.

Validity and reliability were determined by applying the code to the transcripts and having the judges mentioned earlier apply the code independently and then come to consensus. A sufficient number of texts were analyzed to ensure that a comparison could yield results that were valid. Additionally, validity was enhanced by using a combination of inductive code development and prior research driven code, which is referred to as a hybrid approach (Boyatzis, 1998). Some data was used from prior studies (Goldstein, 1980; Krumhansl, 1997; Lowis, 2002; Panksepp, 1995; Sloboda, 1991) as a guide for using descriptors of the peak experience or altered state. Similar data categories were identified within the chosen peak experience samples. The possibility of omitting an essential thematic feature can jeopardize the validity and reliability of the code. Therefore, the data was read and re-read exhaustively to find all occurrences of categories and then submitted to the independent judges. Inductive coding came in when the researcher reviewed the transcripts and searched for opportunities to code new

instances of information. In this study thematic analysis provided a structured format to follow while analyzing the data.

Also, the use of the Nvivo 8 (QSR International Software, 2008) data management software enhanced the accuracy of working with the data; it allowed me to calculate cross-document analysis of relationships, frequency, and total occurrences of words, phrases, and so on.

Procedures

Initially, I presented my study to several mental health agencies and psychology classes at universities in the local Portland, Oregon area. I provided a Participant Survey Packet with a pre-survey questionnaire (the Tellegen Absorption Survey (2006), covering demographics, personal information, and prior incidents of the chill experience); a personal questionnaire (PQ); a participant's bill of rights, a confidentiality statement, and a consent form (see Appendices A and B).

The PQ and TAS were administered to all candidates for participation as case study subjects. This first step served several purposes: (a) to gather data that may be cross validated with other forms of data obtained in the study; (b) to provide a non-intrusive initial contact with potential participants; and (c) to screen for possible candidates for the in-depth research and listening experience and willingness to spend 90 minutes sharing personal data.

In order to achieve the objectives of this study, the Tellegen Absorption Scale (2006) was given; potential participants were asked to nominate music pieces and to describe the music listening experience from a subjective viewpoint.

Participants were asked to schedule a 90-minute laboratory period and listen to the music piece selected along with the investigator being present. The volunteer was directed to sit in a manner accustomed by the listener as comfortable. Depending upon the type of music selected the participant was provided with a brief induction encouraging the individual to focus on the music and their own experience. Music was played at volume and quality that was also self-selected, comfortable, and consistent with previous listening. In all cases music was played with a high-quality stereo system with volume and quality control. It should be noted that participants were given the option to end the experience at any time.

The participant held a tape recorder and was encouraged to speak about any responses that arose. I met with the selected participants and interviewed them about their music listening experience immediately prior to the listening session, during the session itself (if warranted), and after the session. These interviews were recorded with permission on audiotape (see Appendix F for a list of post-interview questions). The taped interviews were transcribed by a professional stenographer. Any outstanding questions or concerns were addressed and recorded during a post-listening interview. There was one notable exception to this process in terms of how the participant recorded. One individual chose to fully immerse himself. That is he did not use the tape during the listening

experience, instead he reported his views after the music had finished. Because each individual is unique, this was one way of accommodating. This listener reported that the tape recording might have negatively affected his experience.

Particular attention was given to responses from the pre-survey, the listening experience itself, and post-survey in terms of overlapping to insure that information was not duplicated; future studies should take this into consideration. For example, the post-interview included questions about the listening experience, however, if the participant addressed the question in-vivo it was left in the transcription of the interview and left blank in the list of post-interview questions, and was left blank only when the data was input to Nvivo 8 database (QSR International Software, 2008). This was done to assure that answers were not duplicated and the number of references a participant made were in fact an accurate reflection of the number of references cited by participants. Additionally, the researcher kept a field journal to record impressions during the music listening experience. The journal was used in order to rely not only on the participant's words, but also on nonverbal cues elicited during the listening experience.

Summary

Chapter 3 described the methods that were employed in this research: design of the study, participant selection, data collection methods, coding, and formats to address reliability and validity. Included in this discussion is how the data was analyzed (using text analysis software and the hybrid approach) and

Chapter 4 presents the findings. In Chapter 5 I discuss these findings and their implications for application and further research.

Chapter 4

Results

This chapter provides the findings from data collected during this study, whose purpose was to describe peak experience as elicited by music. I first present the participants describing demographics relevant to this current study and some very brief highlights to introduce the reader to the participants. This is followed by a presentation of the nine salient themes (gleaned from the 22 data categories) that emerged from the interviews, outlining a brief definition or description of the criteria associated with each; associated words and phrases, and emotional and psychological responses; a quantification of responses; one or more examples; and brief comments on the findings.

Participant Introduction and Demographics

The following descriptions introduce the study subjects and give particular demographic information, including race, ethnicity, and sexual orientation. The music they selected represented this diversity, and the brief comments included here give an indication of how they were affected by the chosen music. This is being provided in order to highlight and give the reader a sense of the participants and their responses. These types of demographics are unique in that past studies did not include this information, and are a result of increased attention given to cultural considerations of participants.

BM, a 65-year-old Caucasian male, has a great deal of formal training in music and is a professional conductor for a choir. He reported several peak

experiences in the past, most notably while performing rather than while listening to music. During the interview he reported several physiological sensations, but had some difficulty articulating emotional responses.

MS is a 23-year-old Latino male who works primarily in the information technology field as well as a vocalist. He reported several incidents of both physical and emotional responses during the listening experience. MS was unique from other participants in that he reported some abstract responses relating to color, rather than an image. The abstract themes provided an opportunity to further explore responses. He related to me the meaning each particular color represented for him.

PL is a 51-year-old gay-identified Caucasian male who is a therapist and uses painting as a means of expression. He actively uses music on a regular basis for meditation, mood enhancement, and as a support for spiritual development.

JDPR is a 33-year-old second generation Latino male who identifies himself as “Americanized” with minimal contact with Latino culture. JDPR uses music to enhance his exercise and to support meditation and reflection, and particularly to explore his thoughts and feelings about spirituality. JDPR reported his peak experience as being able to “think and feel at a global community level.”

RP is a 30-year-old Caucasian female who is a therapist, and stated that; “Music is very important in my life.” She reported that part of the music experience that affects her the most is not only the music itself but the lyrics as well. RP reported that the lyrics express her feelings about relationships and yearning: “It’s as if I were to say it myself, the song can say it for me, but I don’t

have to ‘think’ about what I am saying, instead I can just ‘feel.’” Her song choices reflect her development, almost as a narrative representation, in both her romantic relationships and the relationship she has with her mother.

TG is a 53-year-old self-identified bisexual Caucasian male who said he is “moved by music in a profound way so I can develop compassion in my daily work with my clients.” He reported that he needs to ‘recharge’ his ability to be compassionate to work with his clients and through music he feels more attuned to their concerns. He also said that he uses his relationship to music for reflection and meditation.

TK is a 26-year-old Caucasian male who had no formal training in music. He recently started learning how to play guitar to join a local rock band. He said, “Music has always been a communal experience for me”; he listens to music with his friends. The recent change to playing guitar grew out of his desire to continue experiencing music with others at a “different level.”

NF is a 52-year-old gay-identified Caucasian male. He was eager and emphatic about “strongly identifying” with music that is sung by a male vocalist to another male. He referred to this connection as being able to express feelings not often spoken about, and were particularly repressed as a young man, “when those kinds of things were never mentioned.”

EB is a 23-year-old Caucasian female who reported having very vivid memories with the song choices. She stated, “It’s almost like I am in that moment in time.” Usually these songs and memories are very pleasant, and she purposefully does not listen to any songs that bring up painful memories. She

likened her interest in Western classical music to a global consciousness. She said this genre of music is “a whole different world, but through music I feel connected to things I have never noticed before.” She further added, “it’s a fuller appreciation for connectedness to others or a feeling of belonging or my place in the world.”

EC is a 23-year-old Caucasian female who has been in recovery from abuse of drugs and alcohol for seven years. She likened the associations to the music selected, as biographical narrative to her recovery process. She selected two instrumental pieces of music that produce “very strong emotions and each of the songs evoke two opposite types of feelings in me.” Her response and reports during the listening experience did indeed seem to be representative as she had stated, but also a representation of her development as a young woman as well.

BR is a 34-year-old Caucasian male and a drug and alcohol counselor who also has a history of drug and alcohol use. He has 8 years of sobriety and said that music helps support his recovery process. He uses music to “meditate, focus, and feel calmer.” He also reported that while he retains confidence in his abstinence and sobriety, “I choose to stay away from particular songs that recall my drug using days.”

MJ is a 22-year-old Caucasian male, and reports listening to music “all the time.” Indeed, when we met at the interview and even during conversations other than the interview, music was constantly playing (this is an excellent example of the difference between music as background ‘noise’ and purposeful use of music.) MJ indicated that there are occasions when he listens to music in a purposeful

manner; he described it as a form of prayer and meditation. He was another participant who mentioned avoiding a particular piece of music that elicited painful memories. Even though there are many positive memories associated with this piece of music, the one painful memory supersedes any desire to listen to it purposefully.

JN is a 44-year-old bilingual Latino male who is established in a Latino community in the United States. He uses music to maintain his cultural roots and poignantly stated, “Whenever I feel a yearning to return to Mexico, music is my way to get there.” Many of his memories and feelings are about his family and friends in Mexico. Because his family of origin is in Mexico and he is here in the United States, he reported conflicting feelings of yearning with grief along with a deep appreciation for being in the United States. He also said he has a strong desire to be buried in Mexico when he dies.

JR is a 29-year-old gay-identified Caucasian male who has an executive-level job that he finds very stressful. He uses music to reduce that stress and relax, making it a point to listen to music that is both uplifting and up-tempo. He said he is particularly moved by the “power of the voice singing.”

BH is a 35-year-old gay-identified Caucasian male who is an art therapist. He uses music to support both artistic work, his personal life and in his professional work with clients. He reported always being drawn to the arts in general and that “music, particularly singing, is evocative for me, especially in getting ‘the chills’.”

LL is a 36-year-old gay-identified Caucasian male who reported many memories and associations of music with his “coming out” process and his development as a gay man. He attributed his global activism to the influence of music. LL is another participant who described music as a narrative of his life’s journeys.

CG is a 52-year-old self-identified lesbian Caucasian female who reported being more attuned to music that includes vocals. She is “inspired and moved” by her music choices and said that she uses music when she is feeling nostalgic and wants to reconnect to a particular memory whether the memory be pleasant or sad.

MP is a 47-year-old gay-identified Caucasian male who has a history of using drugs and alcohol to socialize. He said past associations strongly influence his selection of listening music. Although he said he no longer uses illegal substances, he does drink alcohol and perceives that music positively enhances his altered state. An important point by contrast, is that many other participants reported not wanting to affect the altered state they achieved through music by using alcohol or other substances.

MFJ is a 32-year-old African American self-identified lesbian female. Her relationship to music is one that is “very important, and I can’t imagine my life without music.” She said she has difficulty expressing her emotions in general, and that music provides the support and encouragement “to speak to those feelings,” especially those times when she is unable to identify or articulate how she is feeling. She selected songs that were evocative of emotions and “would

encourage me to express myself to you and not hold it in.” This individual was hesitant and nervous at the beginning of the interview, but after listening to the music, she expressed emotions that were both intimate and significant.

MCCF is a 55-year-old Caucasian female who uses music on a regular basis “to keep me motivated at work and at home.” She uses music that is up-tempo to keep her active while doing housework, and uses relaxing and calming music to soothe feelings of either anxiety or nervousness. She reported having vivid memories with so much detail and imagery that she describes it as “being alive in that moment, right there!”

NS is a 51-year-old self-identified lesbian Caucasian female who said that during her childhood she was privileged to attend many live performances by a variety of famous conductors and performers of Western classical music. While there were many memories evoked by the music she selected, she was teary during the music listening session and stated, “I am so in awe and moved by the sheer beauty of the music, you know, the music itself.” She feels the aesthetic value of music is very important and said that she often listens to music for pleasure, but listens to music frequently and purposefully as well “so I can be in touch with that beauty as often as possible.” While this comment may seem to focus on the aesthetic response, it is her association, her childhood memories, and appreciation of those memories that are significant.

Thematic Analysis Results

The following section presents and highlights the main response features, recurrent themes, and patterns that emerged from the interviews and listening experiences, and the salient findings derived from the data analysis. Examples of comments from the participants illustrate the themes that emerged and are presented to provide a fuller sense of peak experience as elicited by music.

The following nine themes [gleaned from 22 data categories that are discussed in the Data Analysis section of Chapter 3] were coded as described in the methodology section: Facilitating Access to Feelings, Physiological Responses, Emotional Responses, Yearning for Resolution, Anticipation of Expected Experiences, Facilitating a Union of Opposite Emotions, Enhanced Memory Recall, Music Experienced as Purposeful, and Observation Alters Experience.

Facilitating access to feelings.

Definition: This theme is defined and coded in the interviews as responses to music that provided the opportunity to access and explore feelings. Included here were instances of abstract ideas, imagery, and reflective or interpretive statements describing the participant's peak experience. Some responses seemed more analytical than descriptive of the peak experience.

Examples of Theme: In the following example, the participant analyzed the music itself as opposed to reporting his own experience:

One of the things I love about this recording of it is it is really slow and the purists are probably rolling over in their grave and the singing is so

operatic. It is just so untraditional and I just love that. There is a great rhythm to this but again, it is so untraditional. Yes, tenors are not supposed to have that much chest in baroque music ...this is what I love. [BM]

While an analytical type of response might seem counterintuitive to a peak experience, I saw it as an opportunity to deepen the conversation about the current experience, or possibly as reflecting the difficulty this person was having entering into the experience. The responses the participant reported provided a basis for delving into particular meanings and associations.

For one participant, this theme expressed itself in a more abstract way, in terms of color:

Very often every song that I listen to has a color that it invokes and in the peaks and the valleys of the song are in a different shade of that color. So, while many songs don't necessarily invoke a memory or something like that, it certainly does invoke a color that once it is there, I can't change it. A lot of times I see brown and usually that means something of the earth to me, but sometimes brown may have nothing to do with that. I would guess it probably would be like my mood at the time, but I haven't really noticed it before today. [MS]

Another individual said that it was difficult for her to articulate anything because she was absorbed in an aesthetic response, "I am crying about the beauty of the music, or the aesthetic" [NS]. This researcher encouraged her, and she was able to express her feelings about her own aging process and the link that the music provided:

You know as I have gotten older, I feel more depth and my feeling towards this piece of music as I listen to it and I just feel stronger about it, more emotional about it. I mean I think years ago I don't think I felt that so much, but I guess maybe this is a part of aging. [NS]

She subsequently reported having a sense of more meaning and significance because of this association, and said she would continue to listen to this piece of

music in a different way. This individual emphasized that this extended to her view of her own aging process.

Quantification of Responses: Twenty-one participants showed 103 instances of psychological responses. These responses occurred 93 times in vivo and 10 were reported to have occurred at other times or for other reasons than the music listening experience.

Findings/Comments: These types of responses were frequently found with individuals who described a meaningful connection with the music or a song. Generally speaking these individuals also noted that it was difficult for them to express emotions. However, the result was that while the individual may have perceived that emotions were difficult to relate, the music gave them a way to access those feelings and encourage expression of those feelings.

Physiological responses.

Definition: This term referred to instances in which participants identified an area of the body where they experienced a physical sensation or some other type of body response. Neck, throat, heart area, arms, shoulders, torso, and legs were areas primarily identified. This category also included any body movement, or bodily changes, as reported by the client or observed by the researcher.

Examples of Theme: Participants described physical sensations as a tingling feeling, “goose-bumps,” or “the chills.” These types of descriptions are consistent with descriptors used in previous studies. Additionally, some individuals referred to the “heart space” as being affected. While the individuals

referred to the physical area of the chest, they also described an emotional component that existed and held significant meaning to the individual.

Findings/Comments: Other descriptors that have not been reported in previous studies were a “warm sensation” or “fluttering sensation” accompanying and in association with the heart space. More information about the “heart space” will be explored in the discussion chapter.

Quantification of Responses: The neck and throat were the most frequently mentioned area, with 16 participants citing 40 instances. Another frequently cited area was the heart or “heart space,” referenced 29 times by 16 participants. The arms or shoulders were mentioned 9 times by 5 participants, and 2 mentioned the torso and legs. Most listeners reported physiological sensations occurring a specific number of times, and as being consistent in both intensity and duration. This was not the case with emotional responses, which are presented next.

Emotional responses.

Definition: The code for this theme was applied when a listener reported, or the researcher observed, a response that was emotional in nature such as tears, fatigue, and facial expressions. This code was utilized strictly speaking for the individual’s emotional response at that moment. Additionally, participants reported music to be either supportive of an emotional state they were already in or an intuitive sense of purposefully being able to influence a mood state to a different state. Participants overall were able to describe the experience of the

piece of music, the current listening experience, and their emotional state as being congruent overall.

Examples of Theme: Aside from the reported feelings and emotional responses, behaviors such as smiling, frowning, tears, clenching the jaw, or gritting teeth were also included. For instance, a listener might display tears but not mention anything about them during the listening experience, and I would notate this during the interview and follow-up after the listening session.

In terms of self-selection, how an individual describes the song emotionally may be an indicator of the emotional state of the individual as is articulated in this instance:

When I listen to music in general, not so much just related to these particular songs, but depending on the mood that I am in, it alters the choice of song, like the choice of the style of music that I want to listen to because I tend to instead of using music to counteract the way that I feel, to enhance the way that I feel, whether it be feeling bad or depressed, I tend to then listen to an album that is kind of depressing sounding or gives off that feeling. On the other hand, if I am really excited about something, I am usually listening to something fast and heavy that goes along with it. [MP]

Whereas this person used music to intensify an existing feeling, others may use music to *change* how they are feeling (for example, if feeling sad, one might play cheerful, and or up-tempo music). This is discussed further in Chapter 5.

Quantification of Responses: Twenty-one participants showed 93 instances of emotional responses. Eighty of these responses occurred in vivo and 13 were reported to have occurred at other times. The phrase “feeling calm” was used 11 times in vivo and referred to three times during the pre- or post-interview by 6 participants. The word “smiling” was used 11 times by 4 participants. One participant reported feeling “aggressive” while another participant reported

clenching his jaw two times, and emphasized experiencing a feeling of anger during the listening session. In two instances in this series of listening session, individuals reported that during crescendos and loud music, they felt angry, or aggressive, and this corresponded to how they perceived the emotional intention of the music.

Findings/Comments: Because emotions are complex, responses that involve emotions may also be considered complex. The premise of looking for objective data in this most subjective of themes might seem daunting. Emotional responses include feelings of happiness or sadness, anxiety, anger, and grief. This theme provided both ample and meaningful opportunity to explore both mood state and peak experience along with the reflections and comments of the post-listening interview.

Yearning for resolution.

Definition: Instances when the listener reports feelings of longing, yearning or a strong wish for an important life event or feeling to be resolved. This code was applied when the participant explicitly stated these feelings as a response to the music selected. In these instances participants reported awareness of memories seemingly triggered by the music. This code was, in part, derived from prior research studies.

Examples of Theme: Frequently, yearning or desire was expressed on a personal level and held significance for the individual, however there were other

instances on a larger scale. One participant reported his desire had more to do with external or global situations this way:

It is the same feeling I get with that kind of longing to want to get back to a place where you were lying in the grass looking up at the moon and you felt like the whole world was in front of you, everything was in front of you, or just not yourself but mankind. [JDPR]

Another participant reported a desire to seek resolution concerning an important relationship: “I don’t know if this is acceptable as an emotion, but to me it’s like yearning and satisfaction and longing and release. Emotionally, there is anxiety and joy and release and satisfaction in that process.” More frequently subjects reported yearning as a profound personal response and the focus itself was more of an overall life review:

I am not sure how to describe it. It is just a sensation. I don’t think about anyone in particular. I just have this sensation of longing. It makes me feel longing and unrequited. I feel this sense of being quite overwhelmed and wishing somehow things might have been different or with a strong sense of having been resolved. [NF]

The same theme was expressed more personally by a different individual:

Almost maybe a little regretful that I don’t feel like I wasted portions of my life or whatever, but I do feel a little regretful that I didn’t maybe come to terms sooner with who I was. I wish I had felt comfortable enough being able to talk to my parents and talk to people about it earlier in my life and I feel like I purposely distanced myself from some people and cut off having a much fuller relationship....especially with my parents. [LL]

Quantification of Responses: Sixteen participants reported a response using the words longing, desire, wish, or aching and that this was elicited by the music selected. Initially there were 43 references by these participants and seven of those references were excluded in that the participant felt the urge or stated they wished to dance, sing or move in response to the song. These seven

references were more appropriately coded to the category of Observation Alters Experience, as the main theme was primarily stifling impulses due to being observed. The remaining 34 responses were reported by participants either during the music listening experience or post-interview.

Findings/Comments: During the pre-interview process none of the participants mentioned anticipating this as a response. However, when the response occurred during the listening experience or discussed during the post-interview, it was reportedly a familiar response.

Anticipation of expected responses.

Definition: The concept of anticipation was given considerable attention in the literature review; expectancy theory helped to guide the methodology of the present study. This code was applied when the participant explicitly referred to preparedness to respond to the music or a musical passage and/or an accompanying response. Listeners selected a song knowing that a particular piece would elicit a particular reaction(s), or that a particular passage would influence them in a particular way.

Examples of Theme: The following example of an anticipated response also highlights the significance of the music for the individual:

Both of these songs are songs that I heard about 15 years ago and they are both classical pieces, which I'm not very educated about classical music. But they both are songs that inspire really strong feelings in me. I think this song to me is like the saddest song in the world. It is just, for me, I can feel like an aching almost. Maybe I should say more about, not just sad, but like a longing kind of aching, almost like grief, which I don't know if this song means that to me when I first heard it so I think it is something

that developed more for me personally at a later time once I knew grief more personally. [EC]

Whereas the previous individual reported the anticipation in the pre-interview, the next theme was described in vivo:

There is an anticipation that I feel in my body or did feel about even putting this on and thinking, 'you know I am going to have some kind of response here' and the anticipation comes along with sort of an anxiety, slight anxiety. Again, like kind of feeling in my stomach, my abdominal area. [BH]

Quantification of Responses: Thirteen participants demonstrated 28 instances of anticipation and commented in vivo. All 21 participants reported expecting a particular response from the song selected. Nineteen of 21 participants (90%) did indeed experience the emotion(s) they anticipated. Additionally, all 21 listeners expected their emotions to be influenced in a particular way, but in 19 instances their actual responses did not occur with the same frequency or intensity they had experienced in listening to the same music on previous occasions.

Findings/Comments: The perceived change in intensity might be attributed to the person's observation of their own experience, or being observed by the researcher. This is discussed further under the theme Observation Alters Experience and given further attention in Chapter 5.

Facilitating a union of opposite emotions.

Definition: This response is defined as instances of seemingly opposite emotions or behaviors considered positive and negative by the listener occurring either simultaneously or in very close proximity during the listening experience.

These responses were also differentiated as to occurring pre-interview, post-interview, or in vivo.

Examples of Theme: During the music listening experience there was the occasion to observe a contrast between what was said—“I’m feeling calm”—and a behavior such as a bouncing leg, tears welling up, or a blush. During the post interview I would use further inquiry with the listener to further clarify what I observed to be a behavior that may or may not be consonant with what was stated. When it was determined by the individual that both responses were equally important, it was coded as an instance of ambivalence.

Ambivalence was reported in a diverse number of ways. For instance, one subject stated during the post-interview, “I am feeling a roller coaster of emotions, really intense, but also feeling vulnerable or poignant as well.” More typically reported was the listener noting two opposite emotions simultaneously in vivo; “I can also feel myself kind of fighting back tears I feel like I’ve lost so much, and yet I think I also feel so grateful and joyous at the same time” [PL].

Quantification of Responses: Feelings of ambivalence were noted by 14 out of 21 participants and mentioned 33 instances. Twenty-six instances of those instances were in vivo, and seven occurred upon reflection (post-interview).

Findings/Comments: This researcher chose to compare the responses of ambivalence to the reported responses of peak experience in vivo. Thirteen of the 14 participants who did report ambivalence and peak experience during their session reported responses of ambivalence *alongside the peak experience*. Six of the participants did not report this event as in vivo, rather it was gleaned from the

coding process and the reporting process through Nvivo 8 (QSR International Software, 2008) and further clarified by the individual. This finding underlies the hypothesis of this researcher concerning this type of response to music. This is important to the research in that it suggests the peak experience response may be a process of ambivalence not articulated as such in language. *Given this, the question becomes, is this response or sensation a process of moving between emotions? Is it possible that the phenomenon represents ambivalence and is a process in and of itself?*

Enhanced memory recall.

Definition: Enhanced memory recall was coded when participants mentioned a specific memory of a past event. This included specific moments or events that were specifically elicited by the music selected. The distinction was made during the coding process as either being self-reported in previous listening experiences, or reported after the listening experience, or in vivo. This is another area that is unique to the current research, in that the memories and associations of the listener were given greater attention. By including rather than excluding personal associations, more attention is focused on music as the antecedent of a peak experience.

Examples of Theme: The participants used the adjectives “vivid,” “so clear,” or “it’s as if I am in that moment” 114 times in relating their memories.

Relative to the word *vivid*, for example, during the post interview EB said:

So every time I hear this particular song, I think of summertime in Southern California. I don’t feel it right now, but when I hear this song

spontaneously I feel the sunshine. I feel the ocean is just around the corner and it makes me happy like a sensation of feeling wrapped with happiness. It makes things feel so real and so *vivid*, almost like I am right there Feels a lot different than at any other time when I don't listen to this song. [EB]

During the in vivo music listening experience NF stated:

This song is about a man singing to another man from his past and that reminds me of the men I've loved and lusted after. It feels so *vivid* just like my high school crushes. I feel like I am right back in time in that moment and all of that from listening to this song. [NF]

Quantification of Responses: Twenty-one participants reported experiencing specific memories or associations that were elicited by the song selected. All 21 participants reported specific memories that were recalled in the pre-interview, in vivo, and post-interview.

Findings/Comments: When I asked for clarification, all 21 participants were able to differentiate between memories that were sparked by occasions or events along with the memories that were elicited by music. The memories elicited by music were perceived to be experienced in much more detail and as more intense; that is, the emotions evoked felt stronger when experienced with than without music. This distinction is important, as it points to the unique role of music as a catalyst in eliciting peak experience.

Music experienced as purposeful.

Definition: This theme speaks to the nature of the relationship an individual may have with music and more importantly how the individual perceives that relationship. Responses were coded in this category when a listener

referred to music as serving a particular purpose other than music in a passive listening mode. This definition excludes any music training.

Examples of Theme: The exploration of participants' relationship to music is unique to the current study. One common aspect of the theme of music experience as purposeful was that it often represented a biographical narrative for life review and reflection. One participant clearly stated that music was very important in her relationships with others and with herself:

For a lot of years in my single life, this song was really about longing for partnership, longing for union and wholeness as symbolized by my significant relationship. I really wanted a relationship and every time I would break up with somebody and ultimately I would come back to this song. Since being married, I was away from the music for a while, but found it again, and now there is a completely different sense for me about union. Because now it is not about searching for a relationship and a partner to become whole, now it is even more about within myself, union just for me, with me, and wholeness. [RP]

Quantification of Responses: This response was recorded for all 21 study participants; it occurred during the pre-interview and post-interview when listeners talk about how they used music in their lives.

Findings/Comments: Attention to the relationship a person has with music may be useful in (a) understanding more clearly how music serves as a catalyst, and (b) how people may be served by music in a clinical setting. Although in itself the idea of music expressing emotions or being symbolic of an individual's narrative is not unusual, examining it in depth in a study is unique to this area of research.

Observation alters experience.

Definition: When a participant reported being outside of the experience of listening to music, observing the peak experience itself, or being aware of an observer. Another basis for coding something in this category was if the participant reported that they started self-observing and stifling an impulse.

Examples of Theme: In some instances participants reported feeling “self-conscious” or being keenly aware of observing or being observed. It was in some of those instances that participants reported stifling any impulses to sing, dance, or respond to the music. One participant reported how being observed changed the music listening experience:

If I was listening to it by myself, and if I was doing something else and the song came on, no, it wouldn't happen. But if I was concentrating on the song, then pretty much, yeah, to varying degrees depending upon how I am feeling at the time and I actually listen to it, it transports me from the moment that I was in to the moment of the song. [JDPR]

With further inquiry, this individual clarified that ‘the moment of the song’ signified ‘passive listening’ as distinct from experiencing a moment of emotional depth.

Another example of this theme was reported post-interview and involved not only the issue of observation, but of ambivalence and anticipation as well:

There is a feeling of how much control over me crying, how much will this feeling take over? I guess it's mixed with embarrassment, because I really haven't cried in front of you or other people about this. Throughout the piece, there were certain times when I felt like I really could really cry more or louder. There was this back and forth feeling that goes on. Like the emotions are welling up and my thoughts are trying decide, how much am I going to allow them to come through? I am feeling split, like somewhere in the middle of my head. Throughout the piece there were times where the music was really building and getting louder that I felt my

emotions were starting to be really activated. Something is moving and I am trying to stop it or at least slow it down in a way. [PL]

This observation was complex in that it includes not only self-awareness, but also some self-analysis, and even ambivalence. However, the overriding theme here is that the individual described a heightened sense of observation. The example above occurred after the listening session, though it should be noted that these thoughts occurred during the music experience. This participant also alluded to the possibility of how his response might impact our relationship. This has been mentioned in the limitations section. In this particular instance, the peak experience may not have been fully captured because of the attending thoughts and all the factors previously stated. In this instance the observation may have had a negative effect.

In contrast to the preceding example and as discussed in the section Description of Participants and Setting under MFJ, the relationship with this particular researcher may have had a positive effect. MFJ felt she would be able to express emotions with this researcher that she might not have shared with others, so in this instance, observation could be considered positive.

In another example, in the post-interview MS reported being surprised (as was this researcher):

Interviewer (I): Is it different with me sitting here than usually, or is it the same?

MS: No, it's not the same as usual, because I am kind of concentrating on that, so you are just part of the background.

I: So, you are able to put everything out of your mind and focus?

MS: Yes.

I: Do you usually always have tears when you hear this song?

MS: No, I don't know if I have ever concentrated like this.

I: So this is a different way of listening, then.

MS: For this song, yes, it seemed to be.

I: How might you describe your experience?

MS: It was a little bit more sentimental, but in a good way.

Quantification of Responses: In 18 of the 21 interviews, participants mentioned being aware of being observed or of observing.

Findings/Comments: The purpose of identifying and coding these moments was to see if the peak experience was affected in any manner by either self-observation or observation by another person. JDPR's comment on this subject is clearly articulated above, PL's comments are much more complex; while PL was describing his experience, the overall nature of the peak experience more than likely was altered, possibly due to the fact that he was attending to his thoughts and thinking about his emotions rather than being fully involved with the music. I suggest that if PL had been fully absorbed in the music, it is possible that he might have had a different type of peak experience.

One unexpected observation was that in 14 instances it appears that the individual paid *more* attention to the music during the listening experience than in previous, unobserved sessions with the same piece. In the instance of MS above, for example, he said his response was more intense than expected.

Salient Findings

The results highlighted provide the relevant material from data collected during this study.

1. Responses noted as psychological occurred the highest number of times. Psychological responses as elicited by music served as a conduit to further access feelings, physical sensations, and memories. Notably, these responses occur more often as a response when music is the catalyst than when reported at other times.
2. Physiological responses occur a specific number of times and are consistent in intensity and duration as perceived by the individual.
3. Emotional responses frequently occurred and appeared to be random in terms of the intensity reported.
4. Anticipation of expected response, both in the pattern of music and in the individual's emotional response to the music were consistent, though the intensity might be affected depending upon particular circumstances such as current mood.
5. Yearning for resolution as a response was recorded wherein the listener described significant or profound meaning to the music. The listener usually reported that the music evoked memories of an unresolved major life event.
6. Ambivalence when reported or displayed, added depth and meaning to the music experience as perceived by the individual and occurred many times in association with the peak experience.
7. When there is an association with music, the memory produced is perceived as vivid by the participant and may correlate with the intensity results in terms of music as a factor.
8. All participants reported both purposeful use of music and articulated a relationship to music also suggesting the individual's relationship to music is a factor in the peak experience.
9. Observing the experience did alter the music listening experience in both positive and negative ways.

In each of the interviews, the individual involved appeared eager and enthusiastic to share their music selections. Music was selected with the

knowledge that particular emotions and sensations would be evoked, and that it would encourage them to express emotions they might not otherwise speak about. In some cases, the individuals “used” the music to speak for them. In all cases the music represented a vital piece of biographical narrative as reported by the participant; this may have resulted from certain events, memories, or associations. While each individual was unique, principally in terms of expression, the resounding theme is that despite the diversity, music served as a catalyst to accessing and expressing feelings on a meaningful level. Participants spoke either directly or implicitly about the positive effects or the negative effects of their music listening experience.

In Chapter 5 I discuss the findings as they answer (or don’t answer) the questions the current study set out to answer; describe relationships between theory and the results of this study; point out the study’s limitations; and present implications for clinical practice as well as recommendations for future studies.

Chapter 5

Discussion

The current study and dissertation explored peak experiences elicited by music in order to add to our knowledge about this important human experience and the role music may play in it. Specifically, the goal has been to (a) provide a meaningful description of a phenomenon using music as a catalyst in an area of research that presently has a very limited number of descriptions available, and (b) to improve our understanding by analyzing these descriptions and interviews relative to the emotional, psychological, and other possible processes that occur during the experience.

In this chapter, I discuss the findings in terms of some of the themes that emerged as they relate to psychology and music psychology theory; I also address how the findings answer the research question. I examine the findings in the context of relevant theory and other research, and discuss the professional and social implications of this dissertation. I then look at the limitations of the current project and make suggestions for future research.

Summary of Findings in Relationship to the Research Question

To briefly recap the findings of the current study, nine themes emerged in the present study's exploration of emotional, psychological, and other possible responses during a peak experience elicited while listening to music. These themes were: Facilitating Access to Feelings, Physiological Responses, Emotional Responses, Yearning for Resolution, Anticipation of Expected Experiences,

Facilitating a Union of Opposite Emotions, Enhanced Memory Recall, Music Experienced as Purposeful, and Observation Alters Experience.

The results show that 22 types of responses were reported overall and that nine of those were themes considered salient. Compared to prior research, four of these findings were unique to this study in that the themes emerged from the participants: Facilitating a Union of Opposite Emotions, Enhanced Memory Recall, Music Experienced as Purposeful, and Observation Alters Experience. Responses recorded as *Facilitating Access to Feelings* occurred most frequently—103 times. This type of response served as a conduit to further access emotions, memories, and thoughts. Notably, these responses occurred more often when music was used than at other times. Participants reported feeling *physiological responses* 51 times; each time the sensations were perceived as consistent in intensity and duration during the listening experience. *Emotional* responses occurred 93 times, but these responses seemed to occur randomly and to vary in intensity. *Anticipation of Expected Responses*—the individual's expectations about how they would respond to the music emotionally—were consistent, though the intensity varied depending upon particular circumstances. This was part of the selection criteria and also consistent with previous studies. Participants attached significant or profound meaning to the 34 instances of *Yearning for Resolution* that were recorded; they typically said that the music evoked memories of an unresolved life event, and in some instance reported that the music represented a biographical narrative. The theme of *Purpose Use of Music* demonstrated that both purposeful use of music and an articulated

relationship to music may be important factors in a peak experience. *Observation Alters the Experience* did change the music listening experience in both positive and negative ways. One unexpected positive result was that in some instances an individual became more focused on listening to the music and reported a more intense experience during the research session than had occurred at prior instances of listening to music. There also may have been instances during the research sessions when the research procedures might have had a negative impact upon the quality of responses to the music because of the presence of the observer.

Participants reported 33 instances of ambivalence, *Facilitating a Union of Opposite Emotions*. This sense of ambivalence was reported to have added depth and meaning to the music experience and in 13 out of 14 instances occurred in association with peak experience. All participants reported *Music Experienced as Purposeful* and articulated a strong *relationship to music*, which suggests that the individual's relationship to music may be a factor in a peak experience as well. This finding has not been examined in previous studies.

Participants appeared eager and enthusiastic to share their chosen music. They selected music that they knew from past experience would evoke emotions and sensations, and would also encourage them to express emotions that might not otherwise be spoken about. In some cases, the individuals "used" the music to speak for them. My contention is that in all cases the music represented a vital part of a biographical narrative or a life event and the music held a symbolic significance. Although each individual was unique, principally in terms of expression, a pervasive finding is that despite the diversity of individuals and of

the music they listened to, music served as a catalyst for accessing and expressing feelings at a very profound level. Participants spoke either directly or implicitly about the depth of either positively toned experiences or negatively toned experiences as they listened to music in the research setting.

Answering the Research Question

The primary question of the present research study is “What are the emotional, psychological, or other possible responses that occur during a peak experience as elicited by music?” The succinct answer is that the 22 themes that emerged during the music listening sessions do describe participants’ experiences in depth, giving details about the nature of the responses to the music in relation to a peak experience.

Here the nine major themes emerged to answer the question: Facilitating Access to Feelings, Physiological Responses, Emotional Responses, Yearning for Resolution, Anticipation of Expected Experiences, Facilitating a Union of Opposite Emotions, Enhanced Memory Recall, Music Experienced as Purposeful, and Observation Alters Experience. It should be noted that some of the themes overlap; for example, there was often interplay between elements of Facilitating Access to Feelings and emotional responses.

It is noteworthy that four new themes emerged that have not been noted in previous studies—Facilitating a Union of Opposite Emotions, Enhanced Memory Recall, Music Experienced as Purposeful, and Observation Alters Experience.

This material provides significant and meaningful information for future, more in-depth research.

Findings of Present Study as Related to Previous Relevant Research

This section discusses the data and findings in the context of relevant studies by other researchers. As I discuss the nine major themes that emerged during this project, I will point out where my findings conflict with, substantiate, or extend earlier research.

This dissertation extends the findings of Sloboda (1991) in regards to human response to music in that he reports, “the significance of this research is to show that these responses, whatever their physiological basis, are shared by a significant number of people” (p. 120). The current study expands beyond Sloboda’s in that it examined other musical cultures aside from Western Classical music. This study included Mexican folk music, as well as variety of genres of popular music that include jazz, American folk music, and rhythm and blues.

However complex a musical structure may be—and it is even more complex when lyrics are added—and however multifaceted a listening experience one has, it is impossible to avoid hearing and responding to music as sound. Responding to music is not simply a matter of reacting helplessly to sounds that trigger instinctual emotions, such as those that sound like emotive human utterances. It also involves responding to the current mood, thoughts, personal memories, and associations that a listening experience may elicit. These moods, thoughts, or associations may be related to the listening situation itself, to

autobiographical memory, or perhaps to musical or poetic knowledge; we listen and respond in some context. Once elicited, such associations may evoke psychological responses through their influence on cognitive appraisal mechanisms. When these associations arise, they and their emotional effects become an integrated and salient part of the listening experience.

Findings: Facilitating access to feelings.

As previously noted, of all the themes that emerged in the study, those identified in this category occurred most frequently—the 21 participants reported 103 of these types of responses. An important aspect of psychological responses is that, as some of the participants themselves reported, they provided the opportunity to explore feelings, memories, and thoughts than when these same feelings occurred at other times without music, the key factor being that music provided an opportunity of greater access for exploration.

Further, since all 21 participants reported this type of response, and all stated that they had a purposeful connection with music in general or the music in particular, it is possible that there may be a correlation between these two factors.

For example, EB reported that she experienced a memory more intensely when she was listening to music than she did when recalling the same memory in the absence of music. NF described her responses as “heightened,” and NS said that “with music my emotions come more easily than without music.” In the pre-interview questions 20 of the 21 participants reported having peak experiences in response to other stimuli, such as art, nature, or meditation. They also noted that

these responses were more intense or profound when they were listening to music. This extends and confirms previous findings (Goldstein, 1980; Krumhansl, 1997; Lewis, 2002; Panksepp, 1995; Sloboda, 1991) that music is an integral part of the process as a catalyst for peak experience and is an important consideration in future research.

Findings: Physiological responses.

As noted earlier, music is processed using multiple cortical regions in complex ways—it involves human affect and cognition functioning in concert with physiology. The physical aspects of how sound is processed is not within the scope of this work, but these previously have been described in great detail (e.g., Lathom-Radocy & Radocy, 1999).

In the current study, two terms descriptive of physiological responses emerged from self-reports (i.e., they were not measured using psychophysiological recordings, but were articulated by the participants themselves): a “warm sensation” or a “fluttering sensation.” The “warm sensation” referred to the area of the body in the chest or heart. The “fluttering sensation” was reported to occur usually in the stomach area and likened to “butterflies in the stomach.” While these sensations point to a physical location, more information is needed to determine if in fact the sensation is a physical response, a psychological one, or possibly both. One participant who reported the “warm sensation” said she felt an emotional response and an increased sense of well-being.

Blood and Zatorre (2001) suggested a clear link between physiological responses and emotional responses in their report that hormones of cortisol, testosterone, and oxytocin trigger the release of the natural opiates of endorphins in the limbic region of the brain. These researchers indicated that the reason previous studies emphasized physiological responses was the hope that understanding hormonal changes might serve as a framework for explaining the human response to music. “Activation of these brain systems in response to a stimulus as abstract as music may represent an emergent property of the complexity of human cognition” (p. 11823). Blood and Zatorre’s research clearly demonstrates the need for additional studies that look more closely at the neurophysiology of responses to music. It may well be that the release of hormones may be connected to the “warm sensation” or the “fluttering sensation” described by participants in the current study.

Findings: Emotional responses.

In comparison to past studies, the present research focused greater attention on participants’ expressions of emotions, with the goal of understanding how peak experience is perceived and what impact it has on the perceptual organization of emotions. However, the emotional reaction to musical influences does not occur in isolation. One’s emotional response depends upon the particular social and cognitive associations with the musical stimuli as well as current mood and ecological conditions. Emotion and arousal, like reward and motivation, involve the limbic system of the brain. This structure is also active in response to

other pleasure-inducing stimuli, such as food, sex, and mood altering drugs (Roederer, 1985). The links between the music and emotional response revealed in the current research suggests that it is important to conducting further basic neurophysiological research and applied research in music therapy.

The 21 participants showed 93 instances of emotional responses; 80 occurred in vivo and 13 were reported to have occurred at other times. This finding is significant and confirms the general sense in the literature (e.g., Juslin, 1997a, 1997b) with regard to the potential difference between the emotions evoked in a given listener and the more objective association of certain musical forms with specific emotions. At times, a listener responds to music without conscious thought, and as music changes in tempo, dynamics, pitch, and timbre, the autonomic system responds to the changes (Bartlett, 1999).

The findings of the present study reveal that in 42 instances of listening to music, the listener's emotion and the emotion inherent in the selected piece of music were consonant each time. This confirms and extends findings in other studies (Gabrielsson, 2001-2002; Krumhansl, 1997). Of course, this does not mean that the listener did not experience other emotions during the song, but rather that the listener connected with an overall, general sense of a particular emotion during the listening experience.

The previous researchers (Goldstein, 1980; Krumhansl, 1997; Lewis, 2002; Panksepp, 1995; Sloboda, 1991) have offered participants a limited list of adjectives, such as "happy" or "sad" to choose from. Given that the scope of this project was to describe peak experience using music as a catalyst, this approach

seemed restrictive. Instead, the design here was to amplify and expand the descriptors of peak experience by highlighting the *participants'* descriptions. It was hoped that by placing greater emphasis on the individual's perceptions, ideas, and thoughts, as subjective as that can be a wider scope of descriptions would emerge providing objective data. What resulted in the articulation of a more in-depth picture describes a range of emotions and subtle aspects of those emotions.

Additionally, I recorded my own observations during the sessions; on some occasions I observed behaviors that were not reported. Examples include tears, clenching or tensing up, or even slight changes in facial expression. In the post-interview I inquired further about these observations. Thus, combining self-report, researcher observation, and further discussion, I was able to extract a wider array of descriptors than prior research. This list of descriptors from previous research also includes new descriptors and is one of the ways the present research answered the research question. (See Appendix H for an inclusive list of descriptors.)

Difficulties and challenges remain for research in this area of inquiry. With such a scant research base, the phenomenon of peak experience as elicited by music is not completely described, understood, or appreciated. The richer descriptions provided by the present study—especially the new findings concerning feelings of ambivalence, intensification of memory, the effects of observation, and the significance of an individual's relationship to music—add to the available data. This dissertation suggests that further research using these

methods may well provide a more comprehensive description of the subjective dimensions of peak experiences using music as a catalyst.

Findings: Yearning for resolution.

Prior research (Berridge, 2003) has suggested that the pleasurable feelings of comfort and safety associated with social bonding are also produced by opiates. As noted earlier, a question exists as to whether there is a neurological link between the peak experience response evoked by music and a response engendered by social loss (whether a romantic attachment, friendship, or death). While this association is suggested, it has yet to be confirmed.

Panksepp (1995) discussed different aspects of this type of response and posited that yearning or desire are associated with a loss of social bonds as one aspect. To further examine this idea, Panksepp and Bekkedal (1997) found that parents responded with a sensation response to their own baby crying, from a recording, than to recorded crying of another baby's infant, and suggested that the loss in this case was due to separation of mother from child.

Panksepp (1995) stated: "Perhaps the 'chill' that we experience especially intensely during sad and bittersweet songs, occurs because that type of music resonates with the ancient emotional circuits that establish internal social values" (p. 199). Put another way, the human desire for connection with others and the resulting loss of that connection may be one aspect of the response of yearning. During the music listening experience or post-interview, 16 participants had a Yearning response. Adjectives such as "yearning," "desire," "wishing," or

“longing” were used. The word “aching” was not documented in other studies and is thus unique to the present research. The term was related to a lost romantic relationship or a loss of connection to a family member. In these instances it was expressed by the participant of a desire to have been able to express something that had not been said, and that by doing so would provide some emotional resolution.

Findings: Anticipation of expected experiences.

The idea of anticipation in peak experiences has been discussed in previous studies (Juslin, 1997a, 1997b; Krumhansl, 1997; Sloboda, 1991) as being important, and it continues to be a point of discussion among music therapists, the discussion includes both the expectations in the music as well as the expectations of how the individual will respond. In the present study, listeners self-selected songs knowing that a particular piece would elicit a certain response, or that a particular passage would influence them in a certain way.

The current study’s findings in this area reinforce those in previous studies (Gabrielsson, 2001-2002; Juslin 1997a, 1997b; Sloboda, 1991) relative to expectancy theory in that the majority of participants (19 of 21, or 90%) did indeed experience the emotion(s) they anticipated. However, my findings also add new information by *differentiating* whether this anticipated emotion arose pre-interview (prior instances that were self-reported), post-interview (instances that were reflected upon afterwards), or in-vivo. In the current study, all 21 participants reported expecting a particular response from the song selected. All

21 listeners expected their emotions to be influenced in a particular way, and 19 (90%) did indeed experience the emotion(s) they anticipated. The current research also found that the participants who did not experience the emotional response to the music that they had expected were surprised and suggested a number of conditions might be responsible, primarily the idea of being observed and self-observation.

The present study reinforced the findings of Meyer (1956), Juslin (1997a, 1997b), Krumhansl (1997), and Frijda (1993), who have substantiated the idea that expectations about the nature of a piece of music are important. When responses were monitored and reported, the emotional and intellectual meaning attached to them emerged as well, providing ample opportunities to explore and access feelings. Ensuring that participants had the opportunity to articulate their expectations and to discuss the meaning of the response enhanced the descriptions of peak experience captured in this dissertation.

Findings: Facilitating a union of opposite emotions.

This research project explores an unusually strong, positive, and comprehensive response to a particular piece or passage of music. In review, particularly the neuroscience section, it seems evident that these types of responses are undoubtedly a combination of neural networking and human biology. The auditory system and its complicated connections to the brain must be the foundation of meaningful responses to music. The specific areas of the brain which have been shown to allow the awareness of pleasure to be somewhat all

encompassing are certainly responsible for a peak experience in response to music.

Previous studies have reported that music elicited responses participants describe as “bittersweet.” For example, Panksepp (1995) discussed ambivalence using the word “bittersweet”:

More than anything, it is probably due to the intensification of bittersweet sadness in music, in conjunction with a thoughtful/nostalgic, perhaps wistful, mood that is evoked by certain pieces, which in the vocal form often focuses on the drama of lost love. (p. 193)

The present study allowed participants to articulate their own definitions of ambivalence. However, this researcher sometimes noted a dissonance between the reported emotion and the observed behavior or conflict of emotions. This approach may have allowed for a more meaningful description of this type of response to emerge.

The idea of processing a set of polar emotions *simultaneously* is a new one. My approach to the research is based upon the idea that peak experience is not only hemispherically processed in both the left and right parts of the brain, but that it is also an integrative emotion that combines bitter and sweet or happy and sad. I believe this conception is unique in that it combines emotional experiences typically perceived as opposites. *This is where the experience of the chills coincides with the ambivalent response.* Could the mood change be indicative of what has been called the chills or be a peak experience itself?

Keeping this question in mind, as has been noted previously is that sadness and joy are neurologically related, and that they share some of the same brain neurochemistry and neurophysiology (Berridge, 2003; Panksepp,

Normansell, Herman, Bishop, & Crepeau, 1998). The processing of both joy and sadness is something akin to bittersweet. Although these emotions are processed in different hemispheres (possibly simultaneously), the fact that they are neurologically related might be a key component of the neurochemistry and neurophysiology involved in this particular emotional response to music.

Previous studies (e.g., Panksepp, 1995) have noted that it is sad music that tends to more frequently arouse a peak experience. Not only do we enjoy sad music, but we also appreciate visual art that elicits sadness as well. That we actually *appreciate* sadness, as well as happiness, may seem odd at first glance. Panksepp commented, “the fact that sadness can provoke chills seems outwardly perplexing from the perspective that most people find the experience to be positive emotionally” (1995, p. 197). This apparent contradiction can also be explained by considering the function of positive and negative sensations. For example, the feelings of sadness that occur in response to a piece of music, while not enjoyable, may evoke a response or an insight that provides the individual with an emotional catharsis or a sense of having resolved a past event perceived as sad. Since the idea that positive and negative emotions may be processed simultaneously is a new idea, the possible neurophysiological mechanisms have not been fully examined.

Finally, and possibly most important, Panksepp (1998), who conducted extensive research on this phenomenon, noted that the emotions of both joy and sadness are processed in both hemispheres of the brain. Thus, both emotions may involve many of the same neurotransmitters and neurological processes. This fact

in and of itself serves to reinforce the possibility that this particular type of peak experience may be an emotional expression of the bittersweet experience.

Collectively, these findings link music with the emotions of joy and sadness through their common recruitment of the brain circuitry that is involved in pleasure and reward, as was noted in the neuroscience section. In this current study, 13 of the 14 participants reported feelings of ambivalence during their session while involved in peak experience. This finding lends support to the idea that this response is produced in part by seemingly polarized emotions. If future studies confirm that ambivalence is a primary factor in producing a peak experience response, we will have made significant progress in answering an important question about the phenomenon itself, the possible role in a peak experience and the neurophysiological mechanisms that occur.

Findings: Enhanced memory recall.

A number of participants reported (either in vivo or post-interview) that a particular memory was more vivid and intense while listening to music than when they had the same memory without music. This implies that when a memory is recalled while listening to music, there is a substantial difference in the “feeling quality” of the memory. The reason the current research examined the connection between listening to music and the intensity of a memory is that a tentative assumption was made that *music assists with memory recall of specific events*. This is significant because previous studies of this phenomenon (Goldstein, 1980; Krumhansl, 1997; Lewis, 2002; Panksepp, 1995; Sloboda, 1991) did not examine

the possible connection between listening to music and the intensity of a memory. In contrast, the current study encouraged participants to express their memories so that a clearer picture of their music listening experience could be documented.

In the present study participants reported that memories elicited by music were more vivid, detailed, and intense than the same memories recalled when not listening to music. One of the implications of this is that, although such emotional qualities may appear to be “subjective,” they are in fact crucial elements in defining the experience. This also suggests one way that music may contribute to peak experiences is through its role in enhancing the vividness, detail, and intensity of memories, which ultimately may affect and shape the peak experience itself.

Further, the present study took into account issues relating to *when* memories were recorded during the research session. Previous studies (Goldstein, 1980; Krumhansl, 1997; Lowis, 2002; Panksepp, 1995; Sloboda, 1991) relied primarily on participants’ recall of any listening experience to identify memories associated with the music; in some instances they did not specify how much time had occurred between the event and the moment of recall. But because *in vivo* is considered a more reliable and consequentially more descriptive source of data—with participants describing their experience *in-the-moment* rather than relying on recall—the current study design recorded memories *in vivo* or immediately after the session. All 21 participants reported some type of memory or association with the self-selected music. Sixteen participants reported *in vivo* memory responses,

and 5 reported either in the pre- or post-interview while describing the significance of their memory associations.

The fact that the present study recorded memories in the research session or immediately before or after sessions is important for another reason as well: potential effects of a delay in reporting memories. As Frijda (1993) pointed out, the objects of affective states—in this case the memory—may not accurately reflect the actual cause or event. Further, a memory and associated emotional response may be unstable or fleeting. Thus, it may be crucial that the memory be captured as close to the actual event as possible, which the current study has done to some degree. Though the event may have had some time pass, the memory is captured in the moment.

Another important point has to do with “declarative memory.” Dowling (1993) explained that a declarative memory is acquired rapidly and involves a momentous life event characterized by strong emotion (which may be experienced as either “positive” or “negative”). These are events that the person considers meaningful and that have a strong impact. In fact, music is often associated with such events in human lives. Dowling contrasts this with “procedural memory,” in which there is less emotional impact. The important point here is the link that we again find between memory and music.

Findings: Music experienced as purposeful.

However complex a musical structure, or multifaceted the listening experience, we cannot avoid hearing and responding to music as sound. The

emotional response is seemingly just as complex and multifaceted. This dissertation has looked at how specific music may trigger a certain memory for an individual. Greater understanding of this process would give us more insight into how and why individuals respond to music in the ways that they do.

The personal meanings and associations an individual may have to music is another dimension that needs further research. Stated differently, we need to learn more about how an individual not only *perceives* a piece of music, but also how that person *uses* music. The majority of previous studies (e.g., Goldstein, 1980; Panksepp, 1995) did not explore this. Lowis (2002) and Sloboda (1991) did look at this relationship, but only in the context of musical training. Although valuable, this is only a single aspect of the nature of the relationship an individual may have with music, which can be in fact multidimensional.

The current dissertation amplifies and extends previous studies by taking into account *how individuals use music*. All 21 participants reported valuing music, with 4 rating it as “important” and 17 as “very important.” Through the questionnaire and interviews, participants were encouraged to describe the various ways they used music. Responses were diverse and illustrative of the personal significance they attached not only to the music itself, but also how the music had influenced or affected them. The most frequent example given was either of support for a current mood state, or support for changing a mood state. One participant [MP] stated it this way: “Instead of using music to counteract the way that I feel, I use it more to enhance the way that I feel, whether it be feeling positive or feeling depressed.”

Using music to support a current mood state is a common practice in music therapy; this is done in order to engage with clients, to meet them where they are at emotionally and psychologically. The next objective is to encourage them, when they are ready for change, by using music that may help to support and effect that change as well. Other examples from participants that demonstrate using music to effect change or influence motivation include music as a support for meditation, exercise, studying, relaxation, and stress reduction. What is important to highlight here is that participants viewed using music to achieve a particular goal as an integral part not only of the listening experience and the peak experience, but of everyday quality of life as well.

Findings: Observation alters experience.

The influence of how observation may alter the peak experience while listening to music was documented both through participant comments and this researcher's observations. As mentioned earlier in Chapter 3 the definition of this theme emerged from participants' reports of feeling "outside" of the music listening experience, feeling as though they were "observing" the experience, being aware that there was an observer, sometimes stifling impulses, or noticing, usually in the moment, that they responded differently than they had in the past to a piece of music when no observer was present.

The paradox here is that the very act of observing an event influences or changes that event—this is Heisenberg's uncertainty principle (Colman, 2001). The act of observing causes disturbance; it changes that which is being observed.

In the present study, it appears that the presence of an observer affected the outcome in an unexpected way, by influencing the potential level of absorption by the participant. Apparently observation may impact the peak experience itself.

Some of the typical reported responses included stifling urges to dance or sing because an observer was present. This may be due to a variety of factors: the relationship with the observer, the individual's ability to express emotions to others, or even an unexpected response in the listener. Any of these might change the response to peak experience, especially considering that the music was preselected and the listeners anticipated responding as they had in previous listening experiences.

It may also be that the act of observation is more analytic than experiential. That is, it may be that due to being observed, or because the participants themselves shifted into an observational mode, peak experience was altered. The act of observation and commenting on their experience may have decreased their capacity to fully engage in the peak experience.

Another example of the effect of observation can be seen in the research of Lewis and Hughes (1997), Panksepp (1995), and Sloboda (1991), who evaluated participants' music training. In investigating peak experience, Sloboda in particular attempted to pinpoint the specific musical structures that evoked reactions. The 83 participants in his study were well versed in music, especially classical music. Sloboda (1991) suggested that musicians were able to pinpoint their responses to a particular musical passage or syntax of the music piece. Musicians' heightened attunement to the structure and syntax of music requires a

different type of attention; it may be that this diffused the emotional responses for this particular group of listeners. Researchers (e.g., Lewis, 2002; Sloboda, 1991) posited that the musicians in their study were less likely to have a peak experience while passively listening to music than non-musicians, speculating that high levels of training may have cued them to attend to the structure of and theory behind the music rather than fully immersing themselves in the listening experience. Alternately Sloboda (1991) reported that musicians were more likely to have a peak experience performing music while being fully absorbed in the performance.

In the current study, 9 participants—MS, JDPR, RP, TG, NF, EC, MP, BH, CG, and TK—reported that their experience during the observed session was *more* intense, vivid, or meaningful than they had anticipated based on their responses to the same music in past listening sessions. They were able to more fully attend to the music, despite the fact that they were reporting responses simultaneously. These individuals were surprised that they felt even more attuned to the listening experience than usual. In addition, it is possible that some responses may have been so brief that they were not reported and therefore were not captured.

One participant, TK, chose not to use the tape recorder while listening. TK deemed the tape recorder “intrusive” and chose instead to attend to the music and report with the tape recorder after the music selected was over. This participant used memory recall in describing responses, which I had some concerns about in relation to recall capacity. Nevertheless, TK did report memories and emotional responses in great detail, to this researcher immediately after.

This instance illustrates how a qualitative method can be adapted to allow for unique circumstances. Even though TK did not follow the strict protocol of using a tape recorder, he was nonetheless able to articulate an important experience. In the practice of music therapy, making music on an instrument gives the individual a mode of expression. While TK was listening to music instead of playing an instrument, he was able to articulate and relate to this researcher and describe his peak experience.

Social and Professional Implications of Research

This section will present a discussion of social implications of the present research, as well as implications for professionals in psychology and music therapy. My own particular interest outside of this study lies in working with chemical dependency and abuse. As a working therapist I have a sense that there is a triangulated link between music and emotional response, and that the third link includes the addiction process. Therefore, I will also discuss some of the implications of my study in the context of clinical implications for addiction.

Although I have focused closely on emotional responses to music, it is important to state that they of course occur in a context; it is not simply a matter of reacting passively to sounds that trigger survival or instinctive emotions. Responding to music involves thoughts, feelings, and associations that may be sparked by a piece of music; physical, social, and cognitive associations to the musical stimulus also come into play. Remarkably, once sparked, these all

become an integrated and relevant part of the listening experience, and it has been my aim to give these factors due attention.

Despite the lack of attention to how peak experiences may be elicited by music, empirical research on peak experiences themselves is extensive. Past studies have addressed variations of peak experiences, descriptions of peak experiences, and various characteristics or aspects of peak experiences. Methodologies have included (a) qualitative, (b) quantitative, and (c) mixed methods focusing on (a) advanced human behaviors, (b) the connection of peak experiences to other factors, or (c) a heavy emphasis on the relationship of peak experiences to student engagement. Researchers identified ecological and personal conditions for peak experiences, including but not limited to situations related to (a) need-satisfaction, (b) goal setting, (c) challenge and control, (d) quest for wholeness, and (e) well-being. Outcomes of peak experiences were concerned with (a) a sense of union with others, (b) empowerment of self, and (c) a heightened sense of self. This study mirrors many of those themes with the ones that emerged from the current study.

To summarize, musical stimuli is processed in both the right and left hemispheres of the brain. The right hemisphere appears to process the emotional qualities of music, while the left side processes the more intellectual and analytical qualities (Weinberger, 1997). Affective and emotional content may be available to both hemispheres by way of connections to the limbic system. Furthermore, evidence (Blood & Zatorre, 2001; Bonny & Pahnke, 1972) points to a close biological connection between the addiction process and musical

processes and in the similarities between physiological functions and responses. A comprehensive overview of the neuroanatomy involved in processing musical and emotional content was given by Michael H. Thaut (1990). Here is where the idea of a triangulated link with music, emotions, and addiction becomes even more apparent, and points to possible clinical applications of my study. However, clinical applications must await a more extensive and in-depth literature review examining the complex chemical reactions of the neurotransmitters involved in mood-altering substances.

Limitations of the Research Findings

Although this phenomenon has been investigated, peak experience as elicited by music in all its many aspects has not been comprehensively described. A review of the literature indicates the divergent ways that this response has been conceptualized. Panksepp (1995) cited the need for a single descriptor, suggesting “skin orgasm”; however, to date a single descriptor has yet to be agreed upon. This has made it difficult to search, identify, and include all studies that might be relevant for a literature review in the current project. More recently, Lewis’ (2002) study used Maslow’s term “peak experience” to identify the phenomenon and that term does appear to be a good fit.

There are various challenges in communicating this sensation to investigators, participants, and readers; the present study took this into consideration by encouraging participants to articulate their experience to the fullest. This was done through providing an atmosphere conducive to the listening

experience and encouraging participants to fully describe the experience in their own terms.

Ample research about peak experiences exists, as does research in humanistic psychology and music therapy. The available research on peak experiences provides information about the characteristics, precursors, and benefits of peak experiences as it relates to people in the work place, the arts, and athletics. Extant empirical research also sheds light on various physiological, emotional, or psychological effects of peak experiences on the human being. However, very limited research relating directly to peak experiences specifically as elicited by music was found.

Researchers in a variety of disciplines have studied peak experiences, and their findings tend to be similar, even though they have used different methods of investigation. To review, the primary methodology in other studies used to ascertain the frequency, duration, and intensity of this phenomenon has been a questionnaire. The limitations of questionnaires with strictly predetermined questions do not allow participants to address many aspects of their experience that is not on the questionnaire nor in their own way. To document such an important human experience, a methodology should allow for the full description that it deserves as was done in the design of the current study.

In the present study most of the interviews elicited self-reports from the participants rather than reports from objective observers. Interviews were used along with questionnaires, and a report from this researcher supplemented participant reports. However, there are other complications and challenges in

collecting data about peak experience; amongst these are the difficulty of describing an elusive or fleeting experience and variations in cultural expression.

Suggestions for Future Research

One suggestion for future studies as it pertains to the design of this current study is that the listening session might be changed in such a way as to provide further opportunity to explore the role of music as a catalyst. This could be done by having two listening sessions, one using music and one not. Listening to the same piece of music more than once may not affect the peak experience response. As Sloboda (1991) stated, “Clearly, listening to a piece of music very many times does not always entail a diminishing of strong emotional response to it” (p. 113). This suggestion for a design change may allow participants to report differences in quality, particularly of the memory evoked, and may lead to more data about the role of music in peak experiences.

Another consideration and suggestion for future studies is to use music alone. The idea is to include music that is self-selected, however, to use music without lyrics. Participants would be directed to nominate a piece of music that does not have a significant language association as was found in some instances in the current study. Making this change is being suggested so as to further focus on the role of music alone.

Longitudinal research would be conducive to understanding the impact of peak experiences using music as a catalyst. A year-long study focused on the music experience would provide researchers a better opportunity to see how

participants recognize this particular type of peak experience, what constitutes such an experience, and how the experience influences them on a daily basis.

A different study could compare the experiences of peakers with nonpeakers. Since Maslow's (1962) studies reveal that virtually everyone has peak experiences—even if some people do not recognize them as such—it would be interesting to explore whether music can help nonpeakers to recognize their peak experiences and develop the capability to create additional peak experiences.

Another suggestion is to conduct a study from an interdisciplinary perspective that explores emotional responses to music as they relate to relevant areas of the neurosciences. Additionally, future clinical applications range from emotional assessment to treating psychological disorders as practiced by music therapists.

Conclusion

The intent of therapy is to provide people with the opportunity to make choices, take risks, develop personal and interpersonal skills, and motivate towards change. Involvement in a therapeutic music experience may stimulate creative processes and help one to develop awareness of these new possibilities. Growth cannot happen when pain and risk are avoided. Maslow (1968) proposed that people who protect themselves from “the hell within” also cut themselves off from “the heaven within” (p. 142). In order to grow, people must explore their capabilities for creation and destruction, their frightening intensities, and their exhilarating potentials: music is one way to achieve this.

Most researchers would agree that our knowledge in the area of music and emotional response, and the psychological and emotional implications of this knowledge, are quite complex. Studies investigating the influence of musical parameters on emotional expression have gathered and analyzed data using a variety of techniques. Some of these involved measuring physiological correlates of emotion in the hope of finding evidence for a direct relationship between the state of a particular musical parameter and emotion evocation.

The earlier research into this type of peak experience tended to frame the phenomenon in a narrow manner, focusing on physiological components, in part because it was not considered “scientific” to study the more “subjective” individual emotional responses. However, over time the importance of the subjective dimension in studying human behavior has become more and more apparent, and qualitative methodologies and methods have evolved and developed. Further, the realization that the very presence of a researcher in some way may affect the outcome of research has called into question the possibility of true objectivity.

A more nuanced methodological approach has developed of attempting to recognize the hidden assumptions we bring to the research; as we bring them into awareness, we are more able to “bracket” them so as not to significantly influence research. Techniques have been developed to offset such bias for example, in the present study three interraters, in addition to this researcher, coded and analyzed the data. Thus it is possible to study the extraordinarily important realm of human

emotion without relying only on the tools of the past in which the focus was tapered.

The present study has used a research method well-suited for delving more deeply into the realm of human emotion that, relatively speaking, has not long been in use. In investigating peak experience as elicited by music this dissertation provides meaningful data with more complete and nuanced descriptions as well as more attention to the role of music than has previously been available in the research literature.

My findings have confirmed certain aspects of previous research and added to other areas. Perhaps the three most important contributions of this work are (a) the fact that this is the first study to look at music as a catalyst in peak experiences and provide a focus on the role music may play; (b) the emphasis on the participants' own descriptions of their experiences in vivo; (c) the material from the in vivo descriptions themselves, and (d) findings not reported by other researchers.

By providing participants with the opportunities to identify and describe their own experiences several new findings emerged. One finding concerns more detailed documentation of the possible connection between a peak experience, music as catalyst and an individual's relationship to music; this may eventually contribute to developing better ways to assist people in making positive changes in their lives by tapping into their investment and the significance of music to that individual. A second finding was that observation of the experience does indeed have an impact on the nature of the experience; even more surprising is that this

effect was sometimes positive and sometimes negative. I believe the most significant finding is that the response of ambivalence, or of conflicting emotions—beyond a simple opposition of happy and sad—appears to be an important element in producing the peak experience particularly in response to music. Overall, the present study documents the very important role music can play in a peak experience and provides much material for continued exploration.

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Appendix A

Glossary of Musical Terms

A few select specific musical terms from the review is provided to assist the reader using definitions from musical orientation (Sadie, 1988, Randel 2003).

Appoggiaturas. A 'leaning note', normally one step above (less often below) the main note. It usually creates a dissonance in the harmony and resolves by step on to the main note on the following weak beat.

Articulation. The separation of successive notes from one another, singly or in groups, by a performer, and the manner in which this is done; the term is more broadly applied to phrasing in general.

Attack. An indication that no pause should be made between two movements.

Chord. The simultaneous sounding of two or more notes.

Crescendo. An instruction to become louder.

Dissonance. Two or more notes sounding together and forming a discord, or a sound which, in the prevailing harmonic system, is unstable and needs to be resolved to a consonance.

Harmony. The combining of notes simultaneously, to produce chords, and their successive use to produce chord progressions.

Melody. A series of musical notes arranged in succession, in a particular rhythmic pattern, to form a recognizable unit.

Meter. The organization of notes in a composition or passage, with respect to time, in such a way that a regular pulse made up of beats can be perceived and the duration of each note can be measured in terms of these beats.

Mode. Term in Western music theory with three main applications, all connected with meanings of the Latin word *modus*. The first is concerned with the relationship between note values in early notation, the second with intervals in early medieval theory, and the third with scale type and melody type. In its commonest sense, "mode" stands for the scale or the selection of notes used as the basis for a composition; this selection has implications about where melodies will end, the shapes they may take and (according to early theory) the expressive character of a piece.

Pitch. The quality of a sound that fixes its position in the scale. Pitch is determined by what the ear perceives as the most fundamental wave-frequency of a sound.

Prosody. Originally versification alone, but currently extended to refer to all features of a language involving stress, pitch, and length of syllables.

Raga. Indian term, often translated as ‘mode’, ‘scale’ or ‘melody type’: a raga represents a series of notes, presented in ascending and descending forms. Each raga is associated with a particular mood and a particular time of the day or the year; a raga is used as a basis for improvisation in Indian classical music.

Rhythm. That aspect of music concerned with the organization of time.

Sequence. The repetition of a phrase of melody and or a harmonic progression at different pitch levels.

Tempo. The speed at which music is performed.

Texture. A term used when referring to the vertical aspect of a musical structure, usually with regard to the way individual parts or voices are put together; it may be described as polyphonic, homophonic, etc. The term can also be used of a melodic part, in reference to its shape, or its level of activity.

Timber. Term describing the tonal quality of a sound; a clarinet and an oboe sounding the same note are said to produce different ‘timbers’.

Appendix B

Glossary of Medical Terms

A few select specific medical terms from the review is provided to assist the reader (Merriam-Webster Online: Collegiate Medical Dictionary, 2000).

Amygdala. One of the four basal ganglia in each cerebral hemisphere that is part of the limbic system and consists of an almond-shaped mass of gray matter in the roof of the lateral ventricle called also *amygdaloid body*, *amygdaloid nucleus*.

Hypothalamus. A portion of the brain that lies beneath the thalamus and secretes substances which control metabolism by exerting an influence on pituitary gland function, and is also involved in the regulation of body temperature.

Limbic System. A collective term to denote a group of sub cortical brain structures at or near the edge (*limbus*) structures. The limbic system exerts an important influence upon the endocrine and autonomic motor systems. Function of the limbic system appears to affect motivational and mood states.

Opiates. A drug, hormone, or other chemical substance having sedative or narcotic effects similar to those containing opium or its derivatives: *a natural brain opiate*. Also called *opioid*.

Parahippocampal Gyrus. A long convolution located on the medial surface of the temporal lobe of the brain and forming the lower part of the *gyrus fornicatus*. Also called *hippocampal gyrus*.

Appendix C

Participant's Bill of Rights and Confidentiality/Informed Consent Form

BILL OF RIGHTS FOR PARTICIPANTS IN PSYCHOLOGICAL RESEARCH

You have the right to.....

1. be treated with dignity and respect;
2. be given a clear description of the purpose of the study and what is expected of you as a participant.;
3. be told of any benefits or risks to you that can be expected from anticipating in the study;
4. know the research psychologist's training and experience;
5. ask any questions you may have about the study;
6. decide to participate or not without any pressure from the researcher or assistants;
7. have your privacy protected within the limits of the law;
8. refuse to answer any research question, refuse to participate in any part of the study; or withdraw from the study at any time without any negative effect to you;
9. be given a description of the overall results of the study upon request;
10. discuss any concerns or file a complaint about the study with the Human Research Review Committee, California Institute of Integral Studies, 1453 Mission Street, San Francisco, California 94103.

Confidentiality Statement

Your privacy with respect to information you disclose during participation in this study will be protected with the limits of the law. However, there are circumstances where a psychologist is required by law to reveal information, usually for the protection of a patient, research participant or others. A report to the appropriate protective agency is required in the follow circumstances:

1. If, in the judgment of the psychologist, a patient or research participant becomes dangerous to himself or herself or others (or their property), and revealing the information is necessary to prevent the danger;
2. If there is suspected child abuse, in other words if a child under 18 has been a victim of a crime or neglect.
3. If there is a suspected elder abuse, in other words if a man or woman age 60 or older has been a victim of crime or neglect.
4. If a report is required, the psychologist should discuss its contents and possible consequences with the patient or research participant.

CONSENT FORM

Alex Babani, a doctoral candidate at the California Institute of Integral Studies in San Francisco, is conducting a study on peak experiences elicited by music. Your participation involves an audio taped interview which can take up to 90 minutes. You will be asked to talk about your listening experience. No prior preparation on your part is required for the interview.

The interview questions may touch sensitive areas for some people; and it is possible some discomfort may arise from this discussion. You will be free to refuse to answer any question or to end your participation in the study at any time. Alex Babani will be available before, during, or after the interviewing process to talk about your concerns, and to facilitate referrals to an independent therapist for consultation if such a need should arise. He can be contacted at (503) 830-8833, if need be.

All the information you contribute will be held in strict confidence within the limits of the law (see the attached confidentiality statement). The audiotapes and transcripts will be kept in a cabinet to which only Alex Babani has access and will be limited to Alex Babani and the transcriber. Neither your name, nor any other identifying information will be included in the dissertation itself. The interviews will not be published unless your consent is given. Your request to omit from the dissertation particular details that you specify to the researcher will be honored.

No direct benefit, either monetary or resulting from the experience itself, is offered or guaranteed. You may, however, find the process interesting and thought-provoking. The information you provide may provide greater understanding of an individual's perceptions of a peak experience elicited by music that are rarely discussed in the professional literature.

If you have any concerns or questions regarding your rights as a participant in this research, or if you feel that you have been placed at risk, you may report them— anonymously, if you wish—to the Chair Human Research Review Committee, California Institute of Integral Studies, 1453 Mission St., San Francisco, CA, 94103, telephone (415) 575-6100.

I, _____, consent to participate in the study of peak experience as elicited by music conducted by Alex Babani of the California Institute of Integral Studies. I have received a copy of this consent form and the Confidentiality Statement, and I understand that my confidentiality will be protected within the limits of the law.

Signature Date

Appendix D

Personal Questionnaire

Date

Dear Participant;

I am a graduate student of psychology and music therapist. I am seeking volunteers to participate in a study that explores an individual's experience while listening to music.

Many people, when listening to music, have one song in particular that they know produces a strong or vivid experience. For example, think of the most wonderful experience or experiences of your life; ecstatic moments, moments of rapture, or possibly even profound sadness. I would like to know if you've had experiences like these while listening to music. I am interested in hearing about your experiences with the music that affects you in this way.

If you are interested in participating, please fill out the following two questionnaires. I will need approximately two weeks to go over the questionnaire. If you are a candidate for the research, based on your responses, I will contact you to set up a meeting. We will select a mutually convenient time to share your music. During our meeting, we will listen to the music you have selected, which you think has a good chance of eliciting strong responses. After listening together, I will ask a series of questions about the song and some further in-depth questions about your experience. This will take about 60 to 90 minutes of your time.

Thank you for your interest, attention, and time. I look forward to hearing your music!

I have enclosed a stamped self-addressed envelope to return these materials as soon as possible. Should you have any further questions please contact Alex Babani at (503) 830 8833.

Sincerely,

Alex Babani

Doctoral Candidate, California Institute of Integral Studies

Pre-Survey Questionnaire (PQ)

Abraham Maslow, in the 1960s, did his classic research on peak-experience by interviewing many individuals. In his research interviews Maslow (1962) referred to peak-experiences in the following manner:

I would like you to think of the most wonderful experience or experiences of your life; happiest moments, ecstatic moments, moments of rapture, perhaps from being in love, or from listening to music or suddenly 'being hit' by a book or a painting, or from some great creative moment. ... try to tell me how you feel in such acute moments...(p. 9)

-1. Do you think you have had a peak-experience such as Maslow describes above?

Please circle: yes or no

-2. If you circled "yes", could you examine the situations below and rank as "1" that situation where you have had the most intense peak-experiences. If you have had peak-experiences in more than one situation, rank the next most intense peak-experience situation as "2". Continue to rank the remaining situations where you have had peak-experiences in the same manner. For each situation where you have had a peak-experience, indicate the level of intensity of the peak-experience by circling the appropriate intensity level.

RANK SITUATION INTENSITY OF PEAK-EXPERIENCE

- a. being in love very mild mild moderate strong very strong
- b. listening to music very mild mild moderate strong very strong
- c. suddenly 'being hit' by a
book or a painting very mild mild moderate strong very strong
- d. some great (personal)
creative moment very mild mild moderate strong very strong
- e. being in nature very mild mild moderate strong very strong
- f. being with animals very mild mild moderate strong very strong

g. in relationship
with children

very mild mild moderate strong very strong

h. other
(please describe)

very mild mild moderate strong very strong

- 1) Have you had a strong emotional response or peak-experience with music?
- 2) Please nominate 2 or 3 songs that produce this type of peak experience:
For each song please identify the nature of the response; consistency (i.e. would you say this is the usual experience or does this experience vary?)
did the same response occur each time listening and in the same part of the body?)
- 3) Describe your involvement with music (e.g. playing an instrument or singing in a choir, meditative use of music or listening to the radio).
- 4) How would you describe your musical training?
Not at all
Interest in music but not trained
Some formal training
A great deal of formal training.

Approximate time spent training ____years ____months

Appendix E

In Vivo/Post-Interview Questionnaire

- 1) Please describe your experiences such as feelings, sensations, memories, thoughts, etc. that occur while listening to this piece of music.
- 2) What part of the body do you typically get these sensations and if they spread to the rest of your body, how so?
- 3) Please indicate the emotion that best describes the feelings you felt during the listening experience.
- 4) How many times did you experience this reaction during this particular listening experience?

Is it different today than at other times when listening to this music?

- 5) Please indicate the emotion that best describes the feeling of the song even if it is different than what you felt while listening.
- 6) Do these memories, feelings, and sensation occur at other times?
- 7) Is there anything else you would like to say about the music listening and your emotional response that you have not mentioned before?
- 8) How important is music in your life? (Please circle one)

Not at all, very little, average, a great deal, very

- 9) On average how many hours per week do you spend listening to music?

Less than 1 hour About 2 hours About 3 hours

About 4 hours About 5 hours About 6 hours

- 10) Do you have any past or current history concerning any type of alcohol or drug use that you are willing to share. (A reminder here that this information is for the purposes of this study and that all information is confidential).

Appendix F

Qualitative Coder Training

Qualitative Coders' Training

November 25, 2008

Working title:

THEMATIC ANALYSIS OF PEAK EXPERIENCES AS ELICITED BY
MUSIC

Introduction

This dissertation seeks to provide a greater understanding of peak experiences as elicited by music. The aim is to better articulate an important human experience referred to by Maslow (1968) as peak experience. Maslow's purpose was to explore the fullness of human nature using music as a catalyst. The importance of understanding peak experiences in clinical psychology is to gain greater insight into the affective states that human beings experience. Maslow (1970) believes that peak experiences should be studied and cultivated so that we can teach those in our culture who "have never had them or who repress or suppress them" (p. 179). The idea is to provide a route to achieve personal growth, integration, and fulfillment. There are other reasons why peak experiences are important to understand. First it is important that psychologists recognize that existential, religious and spiritual beliefs are at the foundation of individual, cultural, and societal frameworks of expression of internal and external experience. Whether the therapist or client recognizes it as an integral part of life or not, conscious and unconscious beliefs about the nature of human existence and its meaning lie at the core of our relationships, values, ethics, morals, and how we act and interact in public and private life.

Research Questions

Using thematic analysis the present study will examine peak experiences as elicited by music and explore the psychological processes and emotional responses that occur during this phenomenon.

The present study is designed to answer the following research questions:

1. What are the descriptions and related themes of peak experience as elicited by music?
2. What are the psychological, emotional, physiological, or other undefined processes that occurred during this phenomenon?

The interview questions are designed to obtain knowledge, descriptors, concepts, phrases, and words to be used as evidence or data that a peak experience or altered state occurs. In describing their experiences, interviewees are expected to mention and describe physiological responses and their frequency and duration. They are expected to mention their emotional responses and be able to identify them or articulate them either in-vivo or upon reflection. Participants will also describe their listening experience that may include memories or associations, images, and archetypes. They may also talk about relationships, social bonds to include family of origin, significant other, children or friends. Individuals may also talk specifically about longing, yearning, loss or other unresolved types of feelings and possibly refer to feelings of ambivalence. Coders need to be prepared to listen to personal narratives that may at times be distressing to the coders.

How to do qualitative data coding

In coding and analyzing the interviews, we will use a procedure which is akin to “Grounded Theory” methodology. We are using this methodology so that in approaching the interview transcripts, we can insure that we are “hearing” what the interviewees had to say with as little interference from preconceptions as possible. Of course, we can never escape our personal, cultural, gendered perceptual lenses entirely.

Step 1

To begin, we need to become familiar with the research questions by discussing them together. We want to have a common understanding of what the question really is. This is more difficult than it first appears. As we proceed, we may find ourselves returning to this issue of the “real question.”

Step 2

Practitioners of qualitative methods speak of a process called bracketing in which we become aware of and attempt to set aside our individual preconceptions. TO accomplish this, the transcript

readers/coders will begin the work by discussing our personal viewpoints with each other. These may come to the surface as we read and react to the abstract and research questions together. Our goal is to become explicit about our own and each other's positions, so that we can help each other avoid interpretive bias as we code the transcripts. As coding proceeds, we can gently point out to each other when we think another is producing idiosyncratic coding that is not true to the transcript. Of course, this requires that a considerable amount of trust be maintained between project coders.

Step 3

The next step is for all of the coders to take the transcripts and read them through thoroughly, to develop an overall sense of the material.

Step 4

When we get back together, we will begin coding the transcripts using an unstructured method called open coding. Open coding essentially means that we are developing the coding scheme or the "code book" as we go. We are not being constrained by any pre-existing coding system or theoretical guidelines. So, we do not begin with a preset list of codes and characteristics to look for. Rather, as we read the transcripts, we highlight phrases, sentences, and whole utterances that seem to speak to the research questions. In the beginning, the exact "chunk" size is also something that needs to be determined--- is it a word or is it a whole utterance? Since we are working together in the same room at the beginning of the process, we can go through the transcripts line by line to develop a common sense of what to code. In this early phase, we can also try to develop a common language for coding similar ideas and themes.

The process of open coding goes on for a long period until all the transcripts have been coded. It is a slow process in the beginning but goes more quickly after several transcripts have been coded. By the third or fourth transcripts, most of the codes have occurred and been named. Later transcripts are coded using codes that already exist--- few new codes are added to list as time goes by.

The final step of this phase is to read back through the transcripts and make sure that codes have been applied in a consistent way across transcripts.

Step 5

The next step includes category coding and is not actually separate from the open coding process. During open coding, coders will begin to notice groups of codes that seem to go together into one category or kind of code. Coders can make note of these relationships in marginal notes or memos for later processing or the categories can become part of the coding system, being applied as coding proceeds. SO, this phase of the process may be carried out by the principal investigator alone or with the assistance of one or more coders. Open codes that seem to fall into common categories are grouped together under higher order category codes. If the structure of the data warrants it, additional levels of structure may be represented by super-ordinate levels of codes. The emerging structure is then depicted by outlining the categories and their member codes in an outline or graphically.

Step 6

In a complete work of Grounded Theory, the coding process would suggest a preliminary theory about the phenomenon or process. In the present study, the endpoint does not require new theory making but rather answering the research questions in a clear way. In the simplest case, this involves using the codes and categories to describe a peak experience as elicited by music per the research questions. The final answers will be shaped both by the experiences reported in the interviews and by the pre-existing questions of the investigator. There may also be answers to questions that were not asked!

It is also desirable to determine the most frequently occurring codes and also whether these codes are representative in the sense that they occur in all the transcripts. So, the frequency and distribution of codes and categories is one outcome. When there is considerable consensus across interviews, a common narrative description of the phenomenon or process under study may be created. If there is no consensus, are there other discernable patterns that can be described?

Step 7

This step--data reduction and data display--is usually completed by the principle investigator. Finding a concise way to present the voluminous data of qualitative studies is a challenge. It is important that the meaningfulness of the narratives be preserved while summary conclusions and patterns of findings are also presented.

Overall reference:

Strauss, A., & Corbin, J. (1994). Grounded theory methodology: An overview. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (1-18). London: Sage.

Appendix G: Descriptors of Peak Experience

Below is a brief description of terms that have been used in the past to describe aspects of peak experiences.

Goldstein, A. (1980). Thrills in response to music and other stimuli, *Physiological Psychology*, 8(1), 126-129) was the first to identify descriptors of the peak experience:

- Thrills
- Tingling sensations (associated with sudden changes in mood or emotion)
- Chills
- Shuddering
- Tingling or tickling (accompanied by a feeling of “hair standing on end” or “goose bumps” on the arms).
- Incipient weeping

Any of the above sensations described might also be accompanied by sighing, palpitation, tension of the jaw and facial muscles, and a feeling of “lump in the throat”

Sloboda, J. A. (1991). Musical structure and emotional response: Some empirical findings, *Psychology of Music*, 19, 110-120) used the following terms:

- Shivers down the spine
- Laughter
- Lump in the throat
- Tears
- Goose pimples
- Racing heart
- Yawning
- Pit of stomach sensations
- Sexual arousal
- Trembling
- Flushing/blushing
- Sweating

Panksepp, J. (1995). The emotional sources of “chills” induced by music. *Music Perception*, 13(2), 171-207.

Referred to Goldstein's terminology as the basis for terminology and as an "empirically based list" (p. 194). Panksepp, however, preferred the word *chills* rather than *thrills*. He also proposed the term *skin orgasm* be added to the lexicon to describe the sensation of the chills.

Lewis, M. J., & Hughes, J. (1997). A comparison of the effects of sacred and secular music on elderly subjects. *Journal of Psychology, 131*, 45-55.
In this first of a series of studies, Lewis focused on evaluating the number of instances that the response occurred and used the terminology of Peak Emotional Experiences that included a more religious or spiritual tone as per the researcher.

Lewis, M. J. (2002). Music as a trigger for peak experiences among a college staff population. *Creativity Research Journal, 14*(3-4), 351-359.
This study focused on music as a catalyst calling the responses peak experience (following Maslow's terminology). Lewis used Sloboda's (1991) list of descriptors, emphasizing an articulation of the *response* rather than the experience.

Babani, A. (2009). Exploring Peak Experiences as Elicited by Music: A Qualitative Study. Publication by dissertation abstract international pending approval by California Institute of Integral Studies.

New terms previously not reported:

- Aching
Participants described this as longing or yearning and associated it with pain both emotional and physical.
- Heart space
Participants described this sensation both in the physical location of feeling sensation and an associated emotional feeling. This was frequently described as an 'opening up' and a sense of 'energy radiating from the heart area.'
- Fluttering
Participants likened this to 'butterflies in the stomach,' however this sensation would occur in different parts of the body; heart, top of the back area, or a sensation in the head and neck area.