

Music Therapy-Based Mechanisms for Coping with Stress and Pain

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Abstract

This article describes three research investigations that focus on the effects of music therapy interventions with different forms of stress and pain. The first study involves music listening strategies for women in labor and delivery; the second tests the impact of eight music listening strategies on depression, anxiety, self-esteem and mood in clinically depressed older adults; the third utilizes a more active music therapy intervention, including music listening, improvisation/active music-making, and songwriting, for women who have metastatic breast cancer. The results of these studies lend support to the use of easily-accessible music strategies in a variety of clinical settings. Implications for applying music therapy-based coping techniques for every day stress and chronic conditions are presented.

Keywords: Music, Coping, Stress, Pain, Childbirth, Cancer

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Introduction

As a music therapist who has practiced for more than 40 years, I have been in the privileged position of helping countless clients and patients deal with their various conditions and diagnoses, using music. My musical tools include singing, playing music, improvising, composing music, listening to music, talking about music, and interacting with music through dance, movement, visual art, and other media. My psychological tools include cognitive, behavioral, existential, gestalt and similar approaches to therapy that guide my process in applying music to meet the needs of those I serve. Over the years, I have come to specialize in working with people in pain and under profound stress, including women in childbirth, severely depressed and anxious older adults, and individuals who live with cancer. My focus on the use of music in medicine has enabled me to develop some unique evidence-based techniques that almost anyone undergoing stress or pain may utilize as coping strategies. This experience has generated theories that were translated into research hypotheses, and tested in rigorous experimental designs. The evolution of clinical protocols is summarized in this article through three such research investigations, as they have attempted to determine the efficacy of music therapy methodologies for coping with stress and pain.

Music for Pain in Childbirth

The pain of childbirth comes in the form of contractions that facilitate the journey of the fetus through the birth canal. During labor, abdominal contractions escalate in frequency, duration and strength, culminating in the transition stage of labor and the birth of the baby. These acute pains are, therefore, transitory and functional, but customarily continue for many hours during the childbirth process. Typical prepared childbirth methods include concentrating on a visual focal point and breathing intentionally in a steady pattern, in order to distract the laboring mother from the pain of contractions. Given the basic rhythmic nature of music and its ability to attract and regulate attention, it seemed possible that focusing on music could serve as both an auditory focal point and a cue for rhythmic and paced breathing. It was hypothesized that listening to music could facilitate childbearing in this way. The most potentially effective music protocol would utilize music that held meaning to the expectant mother, and could be accessed both at home during practice of prepared childbirth techniques, and while undergoing active labor in the hospital setting. It was determined that a music therapist would be engaged with the pregnant woman to help her identify music appropriate for labor, to observe her during practice sessions to document the influence of that music, and to attend labor and delivery, in order to assist in selecting the most potentially effective music.

To test the influence of this protocol, I, along with two music therapy colleagues at University of the Pacific, Sharon Larson and Audree O'Connell, recruited couples from prepared childbirth classes in Stockton, a city in northern California, USA (Hanser, Larson and O'Connell 1983). After agreeing to participate in the research, each pregnant woman and her coach met with one of us to develop a personal music plan for labor. For each woman, we created four categories for her favorite music to meet the following criteria: mood-elevating music, memory-evoking mu-

sic, relaxing music, and energizing, attention-provoking music. We experimented with this music to determine whether each selection, indeed, had the desired effect, by asking each woman to practice the breathing techniques she was learning in class, accompanied by each piece of music she selected. Her music therapist observed her in the comfort of her home, and asked her to identify the thoughts, feelings, and images that she was experiencing as she listened. The therapist then ordered the recordings according to tempo, starting with the slowest and continuing with faster and faster tunes. This resulted in a complete package of musical samples, sufficient for several hours of playing time. Each woman was asked to continue regular practice of these prepared childbirth breathing techniques along with her music package.

As soon as one of the research subjects went into labor, a music therapist met her at the hospital. Each woman chose the specific piece of music that she wished to hear at the moment, but the music therapist also used the following guidelines to determine the final selection. At the start of labor, relaxing music that was judged pleasant and comforting by the woman was generally the music of choice, unless the expectant mother specifically requested something else. Mood-elevating and memory-evoking music were also played as contractions built up in intensity. During this time, the music therapist played music of gradually faster tempo. When it became more challenging to maintain control and regulate the breath, music with a strong and steady beat replaced slower, flowing melodies. Energizing, attention-provoking music began to substitute for some of the more relaxing selections. The woman was guided to breathe with the music, and focus on the memories or images that came to mind. For the duration of her labor, the music therapist identified the most effective music to help her maintain focus and relax as deeply as she could. Throughout the experience, she was ultimately in control of choosing the music.

Due to the extraordinary number of individual differences in labor and delivery, hundreds of women would have been required to achieve sufficient power to detect a difference between women who experienced music in labor and a control group of women who did not. For this reason, a repeated measures design, using each woman as her own control, was selected for the research. In this approach, each woman had her own music selections playing for a set of 10 contractions, and then the music was turned off for the following 5 contractions. She listened to music, then no music, music, then none, continuing this pattern for the entire labor. Because of the many physiological and psychological concomitants of labor, and the difficulty of observing relaxation, a behavioral checklist of pain-related behaviors was designed to measure differences between music and no music conditions. These behaviors included tension of the body, as demonstrated by flexed feet, gritting of teeth, hunched shoulders, fists, or tightly-shut eyes. Other dimensions of responses to contractions were composed of vocalizations of pain, shifts in position, and requests for medication. During each contraction, the music therapist noted the number of behaviors that occurred, on a specially-designed observation form. These data were compared for contractions in which music was present versus contractions in which there was no music. In each labor, a second

observer accompanied the music therapist, and recorded the same data. Inter-observer reliability between the two was high.

The results showed a greater number of pain-related responses during periods of no music, when compared with periods of music, for every woman who was included in the research. Seven women completed the protocol, and were included in the article published in the *Journal of Music Therapy*. These new mothers commented on the efficacy of having an auditory focal point to cope with the pain of contractions during labor. They also described enhanced relaxation that they felt in the presence of the music, particularly between contractions. Having the support and assistance of the music therapist was another advantage cited by most of the mothers. Clearly, this music listening protocol was effective in helping women through labor and the birth of their children.

Music for Depression and Anxiety

The success of the childbirth study lent support to the assumption that music had great potential to reduce the perception of acute pain during the labor associated with childbearing. A secondary outcome of this protocol was the reduction in anxiety and increase in relaxation, at least in between contractions. This finding supported the established relationship between anxiety and pain, and also between mind and body. It then led to a further investigation of the impact of music listening on psychological factors, notably anxiety and depression (Hanser and Thompson 1994). Because music is widely available at low cost, it was apparent that music could be of value to individuals who do not have easy access to community resources, particularly psychological services. In particular, older adults who are homebound because of illness, incapacity, the burden of caring for a spouse with physical or mental disability, or lack of economic means could benefit from music therapy techniques performed in their own homes. A more extensive music protocol that would take into account more chronic, long-term issues would need to be developed. It was Dr. Larry Thompson, Co-Director of the Older Adult Research and Resource Center at Stanford University Medical School and the Menlo Park Veterans Affairs Medical Center in California, who saw the potential effectiveness of music with the clients he served. Dr. Thompson agreed to sponsor my application for a National Research Service Award from the National Institute on Aging (NIA) to test the impact of music therapy on older adults who had serious depression and concomitant anxiety. NIA granted a post-doctoral fellowship, and the research began with 60 older adults, all of whom were diagnosed with clinical depression – minor type.

Because I realized that home visits by me might alone result in the social support sufficient to improve anxiety and depression, I designed a randomized controlled trial to test the hypothesis that listening to music selected by these older adults would positively affect depression, anxiety, self-esteem, and mood. Individuals were randomly assigned to one of three conditions. In one condition (home-based music therapy), I visited each person at home once a week for eight weeks, where I introduced one of eight music listening programs designed to reduce stress. During our meeting, I helped them identify music that was personally meaningful

and appropriate for each program, and we practiced one technique. In the second condition (self-administered, minimal therapist), these older adults received two pages of instructions on a specific music listening technique, and I made a telephone call once a week to assist them in selecting their own special music. There was no other contact between the music therapist and these individuals. Thus, this condition controlled for presence of the therapist, and gave these elders the opportunity to practice the techniques on their own. The third condition was a wait list control, and these people were monitored for depression weekly, but engaged in their normal activities, with the promise that they could enroll in the study after eight weeks.

The research subjects were instructed to listen to their music every day along with one technique, and they each determined the length of time and time of day that were most feasible. The eight music listening techniques involved three techniques for body relaxation, two for mind relaxation, and three more for other exercises. Body relaxation included gentle exercise to music, a facial massage, and progressive muscle relaxation, accompanied by their specially-selected music. Mind relaxation involved imagery to music (e.g., closing their eyes and letting the music take them to a beautiful, peaceful place), and a specific imagery exercise designed for the individual (e.g., finding a wonderful place they had visited, and attempting to solve one problem while there, in their mind's eye). The last three were developed for the purposes of sleep enhancement, energy boost, and creativity. As might be obvious, some music has the capacity to calm and relax, so the research participants identified music that was deeply relaxing, and played it at bedtime. Conversely, they found exciting music that grabbed their attention, and played it first thing in the morning. In the creativity exercise, they were asked to develop a plan to engage in music along with another art form, learn an instrument, sing to the music, or involve themselves in an active music-making.

All research subjects completed self-report measures of depression, anxiety, self-esteem, and mood before beginning the protocol, then after four weeks of participation, and at the conclusion of the eight-week treatment period, as a post-test. These psychological instruments were sent via mail to all participants, with a self-addressed stamped envelope to return to the research office. Those in the two music conditions also completed these measurements nine months after the conclusion of treatment. There was a high degree of compliance with these techniques for the individuals who participated in the music listening techniques. It is conjectured that they found secondary benefits to the music listening activities.

The results of the experiment revealed that subjects in the two music conditions reduced their depression and anxiety, and enhanced their self-esteem and mood, over the eight-week research period. Their scores on all measures were statistically significantly different from those in the control condition, in favor of the music groups. Their improvement in depression was so great that it was calculated to be clinically significant, i.e., these clinically depressed older adults more closely resembled a non-depressed sample of elders, by the end of eight weeks. In addition, follow-up scores nine months later were not significantly different from post-test

scores. Maintenance of the impressive gains occurred in both music conditions, with the self-administered, minimal therapist condition displaying even more improvement than those in the home-based condition.

The findings demonstrate the potential of a psychoeducational strategy that is accessible and low cost to improve depression and anxiety in older adults. If music listening with simple instructions could benefit these depressed and isolated individuals so profoundly, what would be the impact of a more interactional music protocol?

Music in Cancer Care

Having held an appointment as music therapist at the Zakim Center for Integrative Therapies at Dana-Farber Cancer Institute in Boston, I had the opportunity to run another randomized controlled trial, this time with women who had metastatic breast cancer. These women were dealing with the stresses of living with a serious life-threatening condition, while experiencing the pain, discomfort, and other symptoms associated with chemotherapy treatment.

In order to design this protocol, I consulted with an interdisciplinary team of colleagues in various specialties, including music therapy, oncology medicine, nursing, and research (Hanser et al. 2006). We were interested in examining the impact of music therapy on long-term quality of life, as well as short-term psychological and physiological change. Specifically, we examined quality of life and spirituality over time, while assessing pre- vs. post-session psychological status via self-report on a visual analogue scale of comfort, contentment, and relaxation. Arousal before and after music therapy sessions was measured by blood pressure and heart rate.



Figure 1. The author with a 12-string lyre, used with women who have cancer.

Seventy women who were undergoing chemotherapy were randomly assigned to either the music therapy condition or a wait list control group. Those women participating in music therapy met with me or fellow music therapist, Lorrie Kubicek, during three of their outpatient chemotherapy sessions, customarily three to four weeks apart. The music therapist met individually with each woman while they were being infused. The first music therapy session was devoted to music listening, but this time, the music therapist provided live music on guitar, voice, keyboard, Native American flute and/or twelve-string lyre. Few demands were placed on the participants; they were asked merely to listen to the music performed or improvised vocally and on musical instruments. The second session began with their favorite live music, and subsequently, the music therapist invited each woman to improvise to the therapist's music. Percussion instruments that were easy to master and perform without much instruction were provided; they included a collection of drums, hand chimes, xylophones, rain stick, and dulcimer. The third session was devoted to writing songs. Participants were encouraged to compose a song with the assistance of the therapist. Common themes included songs that communicated something that the woman wanted to say to a loved one; songs about people she loved, and songs about the experience of having cancer or the experience of music. In most cases, the music therapist used music that the woman knew and enjoyed to cue composing new, original lyrics. For others, the lyrics came from favorite poems, affirmations, or personal journey entries. Some created their own melodies. Many recorded their original songs, and shared them with family and friends.

Challenges to the research design became evident when many of the participants were unable to attend their scheduled chemotherapy appointment because they were too ill. The music therapy sessions became quite diluted when the time between appointments stretched to several months, and it was not possible to hold three sessions within four months. Long-term outcomes of the treatment were difficult to determine because statistical power lagged when several subjects needed to be dropped from the study. Nevertheless, pre- and post- session blood pressure and heart rate were compared. Blood pressure proved to be quite complicated to test, due to lymphedema experienced by many, and there was also great variability in readings amongst the participants. However, stress arousal as measured by heart rate was significantly lower post-session, as opposed to pre-session. On the visual analogue scales, comfort, contentment, and relaxation were all significantly changed, when pre- and post-session scores were compared. On a survey, the women were asked to identify whether the session were helpful, and if so, to state why. Themes of participant responses included the following:

- Sessions were relaxing
- Sessions were transformative
- Participants developed a new tool to cope with cancer
- Participants were reawakened to music and passion
- Music was pleasurable or peaceful
- They experienced a new awareness or transformation
- Music was energizing
- Sessions helped with pain

Most participants reported significant relaxation through music as an important outcome. The majority were enthusiastic about music therapy, many expressing a desire to continue to work with the music therapist and to apply the techniques when they were in distress.

Conclusion

In these three studies, passive music listening and active participation in creative music therapy experiences had impact on three distinct clinical populations. Lessons learned from these investigations and other clinical research were summarized in a book with accompanying CD entitled, *Manage Your Stress and Pain through Music*, co-authored by Dr. Susan Mandel (Hanser and Mandel 2010). The book explicates several of the music therapy techniques used in the research, and applies them to a variety of conditions from every day stress to chronic pain.

The conclusions drawn from the research and clinical experience of the author contribute to the idea that when people learn how to truly listen to music, and listen to the impact that it has on them, they can use this modality deliberately and functionally to change their mood. Even more significantly, they can learn to use music to help them cope with stressors, large and small, and pain, psychological and physical.

Actively engaging in music, through singing, improvising, playing instruments and writing songs, adds another dimension to the music experience. These visceral pursuits enable individuals to express themselves by exploring their intuitive and creative side. They involve mind and body as few other stimuli do, and as a result, can be effective in focusing attention and gaining a sense of mastery. When individuals make music, they are surrounded in a potentially powerful creative process that is uniquely their own. Yet it is challenging to document these changes that music therapists observe all the time in their work. The research is promising, but just beginning to uncover the actual impact of music as therapy. Future efforts will require both a quantitative and qualitative look at music therapy techniques with a multiplicity of clinical applications, in order to understand those elements that are instrumental in affecting change.

Today's mp3 players and iTechnologies are making music more accessible and cost effective than ever. I hope that this article has inspired the reader to apply music and music therapy techniques whenever stress or pain interfere with daily living, and to enjoy music every day.

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