2009-12-17

The Influence of Music on Depression, Affect, and Benefit Finding Among Women at the Completion of Treatment for Breast Cancer

Julie J. Stordahl
University of Miami, jstordahl@gmail.com

Follow this and additional works at: https://scholarlyrepository.miami.edu/oa_dissertations

Recommended Citation
Stordahl, Julie J., "The Influence of Music on Depression, Affect, and Benefit Finding Among Women at the Completion of Treatment for Breast Cancer" (2009). Open Access Dissertations. 337.
https://scholarlyrepository.miami.edu/oa_dissertations/337

This Open access is brought to you for free and open access by the Electronic Theses and Dissertations at Scholarly Repository. It has been accepted for inclusion in Open Access Dissertations by an authorized administrator of Scholarly Repository. For more information, please contact repository.library@miami.edu.
UNIVERSITY OF MIAMI

THE INFLUENCE OF MUSIC ON DEPRESSION, AFFECT, AND BENEFIT FINDING AMONG WOMEN AT THE COMPLETION OF TREATMENT FOR BREAST CANCER

By

Julie J. Stordahl

A DISSERTATION

Submitted to the Faculty of the University of Miami in partial fulfillment of the requirements for the degree of Doctor of Philosophy

Coral Gables, Florida

December 2009
THE INFLUENCE OF MUSIC ON DEPRESSION, AFFECT, AND BENEFIT FINDING AMONG WOMEN AT THE COMPLETION OF TREATMENT FOR BREAST CANCER

Julie J. Stordahl

Approved:

Teresa L. Lesiuk, Ph.D.
Assistant Professor, Music Therapy

Terri A. Scandura, Ph.D.
Dean of the Graduate School

Edward P. Asmus, Ph.D.
Associate Dean for Graduate Studies

Shannon K. de l’Etoile
Program Director and Associate Professor, Music Therapy

Stephen F. Zdzinski, Ph.D.
Associate Professor, Music Education

Suzanne C. Lechner, Ph.D.
Research Assistant Professor, Departments of Psychiatry and Psychology
Women at the completion of treatment for breast cancer experience relief along with continued physical and psychological distress. This study explored the effectiveness of two forms of a Relaxation Intervention in providing psychosocial support to women at the completion of treatment for breast cancer. The two conditions included (1) Music-Assisted Relaxation (MAR), in which contemporary, sedative music was paired with standard, spoken relaxation directives, and (2) Relaxation Alone (RA), in which only spoken relaxation directives were used. Individual sessions were held once each week for four weeks. This study included a mixed method design. Quantitative measures included The Center for Epidemiologic Studies – Depression Scale, The Profile of Mood States – Short Form, and The Benefit Finding Scale, a measure of psychological growth. Qualitative measures included Participant Diaries and a Semi-Structured Interview. A total of 20 women participated in this study, with 10 women in each of the two intervention conditions. Results revealed a statistically significant reduction in Depression for all participants over the course of the intervention. In addition, participants receiving MAR showed a statistically significantly greater improvement in Positive Affect during Week Three of the intervention when compared with participants receiving RA. Review of effect size calculations indicated that MAR had a stronger
influence on Total Distress, Positive Affect, and Negative Affect than RA. Results from
the qualitative analyses supported the quantitative findings, showing that the both forms
of the Relaxation Intervention promoted reductions in Depression, seen in improved
energy levels and better sleep. The Relaxation Intervention also led to improvements in
Positive Affect, seen in greater focus of attention and elicitation of positive images and
memories, especially for those participants in the MAR condition. In summary, the
Relaxation Intervention used in this study was effective in reducing Depression among all
participants. During specific weeks, all participants reported a decrease in Total Distress
and Negative Affect and an increase in Positive Affect. MAR enhanced the effectiveness
of the intervention, primarily through the promotion of positive mood states.
Acknowledgements

I would like to thank the members of my committee for their guidance and thoughtful suggestions: Edward Asmus, Shannon de l’Etoile, and Stephen Zdzinski. Thank you to Suzanne Lechner for very practical assistance in planning, recruiting, and helping the project take flight. A very special and sincere thank you to Teresa Lesiuk, for her wholehearted dedication to, and celebration of, this incredible academic journey. Thank you all for your part in lighting my path.

Special thanks to Dr. Christiane Takita and all of the staff of the Sylvester Comprehensive Cancer Center, especially Grisel, Jennifer, and Nurse Bradley – I could not have done this without each of you. Special thanks also to Peggy Rios, Amparo, and everyone at The Wellness Community for their help and their support of this project.

Thank you to Dana Salminen for assistance with the recording, engineering, and creation of the CDs used in this project.

Heartfelt thanks to my family, those here on earth and those gone too soon. Thank you to my friends, many of whom are like family. Hugs to Susan and Debi for amazing love and friendship … to Michelle for helping me get through the tough times … to Ellen for believing in me and supporting me … to Bridget, a true kindred spirit … to Ahmad, Charlie, and Linda for helping me burn hundreds of CDs … to my beloved cat, Moxy, for being beside me through it all … to all who have offered their encouragement and inspiration, in ways large and small, in places near and far … thank you!

Most importantly of all, I would like to express my deepest appreciation to all of the breast cancer survivors who participated in this project and to all whom I encountered along the way. I simply could not have done this without their cooperation and their
belief in this project. I dedicate this manuscript to those women whose experiences are, truly, its essence.
# TABLE OF CONTENTS

| LIST OF FIGURES | ix |
| LIST OF TABLES | xi |

## Chapter

1. **INTRODUCTION** ................................................................. 1  
   Breast Cancer ................................................................. 2  
   Breast Cancer Diagnosis .............................................. 2  
   Breast Cancer Treatment .............................................. 3  
   Completion of Breast Cancer Treatment ...................... 6  
   Statement of the Problem ............................................. 6  
   Purpose of the Study ..................................................... 7  
   Significance of the Study .............................................. 8  
   The Research Questions and Hypotheses .................... 9  
   Statistical Considerations ........................................... 10  
   Terms ............................................................................. 11  

2. **RELATED LITERATURE** .................................................. 13  
   Cognitive-Behavioral Stress Management Interventions for Women with Breast Cancer ........................................... 13  
   Music ............................................................................ 14  
   Music and Relaxation ................................................... 14  
   Music Therapy and Relaxation ...................................... 14  
   Music and Physiology .................................................. 21  
   Music and Context ....................................................... 25  
   Music and Emotion ....................................................... 29  
   Neuropsychology and Music ....................................... 29  
   Stimulus ........................................................................ 29  
   Limbic System ............................................................. 29  
   The Brain Reward System .......................................... 30  
   Stimulus Properties ..................................................... 31  
   Affective Experiences with Music ................................. 32  
   Mood ............................................................................ 35  
   Depression .................................................................... 35  
   Affect ............................................................................ 41  
   Negative Affect ............................................................ 41  
   Positive Affect ............................................................ 42  
   Neuropsychology of Positive Affect ............................ 43  
   Benefit Finding ............................................................ 47
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Dopamine Projection Areas of the Brain</td>
<td>44</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Depression</td>
<td>MAR</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Depression</td>
<td>RA</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Total Distress</td>
<td>MAR</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Total Distress</td>
<td>RA</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Positive Affect</td>
<td>MAR</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Positive Affect</td>
<td>RA</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Negative Affect</td>
<td>MAR</td>
</tr>
<tr>
<td>Figure 9</td>
<td>Negative Affect</td>
<td>RA</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Benefit Finding</td>
<td>MAR</td>
</tr>
<tr>
<td>Figure 11</td>
<td>Benefit Finding</td>
<td>RA</td>
</tr>
<tr>
<td>Figure 12</td>
<td>Effect Size</td>
<td>Depression</td>
</tr>
<tr>
<td>Figure 13</td>
<td>Effect Size</td>
<td>Total Distress</td>
</tr>
</tbody>
</table>
Figure 14
Effect Size | Total Distress Over Time ................................................................. 97

Figure 15
Effect Size | Positive Affect .................................................................................. 100

Figure 16
Effect Size | Positive Affect Over Time .................................................................. 100

Figure 17
Effect Size | Negative Affect .................................................................................. 103

Figure 18
Effect Size | Negative Affect Over Time .................................................................. 103

Figure 19
Effect Size | Benefit Finding ..................................................................................... 106
## LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Description of MAR</td>
</tr>
<tr>
<td>Table 2</td>
<td>Description of RA</td>
</tr>
<tr>
<td>Table 3</td>
<td>Study Calendar</td>
</tr>
<tr>
<td>Table 4</td>
<td>Demographics</td>
</tr>
<tr>
<td>Table 5</td>
<td>Musical Characteristics</td>
</tr>
<tr>
<td>Table 6</td>
<td>Mean Scores for Depression</td>
</tr>
<tr>
<td>Table 7</td>
<td>Mean Scores for Total Distress</td>
</tr>
<tr>
<td>Table 8</td>
<td>Mean Scores for Positive Affect</td>
</tr>
<tr>
<td>Table 9</td>
<td>Mean Scores for Negative Affect</td>
</tr>
<tr>
<td>Table 10</td>
<td>Mean Scores for Benefit Finding</td>
</tr>
<tr>
<td>Table 11</td>
<td>Reliability Estimates</td>
</tr>
<tr>
<td>Table 12</td>
<td>Interpretation of Cohen’s d</td>
</tr>
<tr>
<td>Table 13</td>
<td>Mixed ANOVA Summary Table</td>
</tr>
</tbody>
</table>
Table 14
Mixed ANOVA Summary Tables | Total Distress .....................................................  96

Table 15
Effect Size | Total Distress ..........................................................  96

Table 16
Mixed ANOVA Summary Tables | Positive Affect ....................................................  99

Table 17
Effect Size | Positive Affect ..........................................................  99

Table 18
Mixed ANOVA Summary Tables | Negative Affect ....................................................  102

Table 19
Effect Size | Negative Affect ..........................................................  102

Table 20
Mixed ANOVA Summary Table | Benefit Finding ....................................................  105
CHAPTER ONE

Introduction

After being diagnosed with breast cancer, one of the first things a woman may wonder is, “Will I die?” This is followed soon after by, “Will I lose my breast?” The diagnosis of breast cancer undoubtedly has a tremendous psychological impact on the woman, as well as her loved ones. Despite initial feelings of shock or anger, she must quickly become educated about her breast cancer and her options, in preparation to take action (Love, 1995).

Breast cancer is the most common form of cancer among women, personally affecting one of every eight women (American Cancer Society, 2007, 2009). The incidence of breast cancer in the United States has actually begun to decrease in recent years, beginning in 1999 and further declining from 2002 to 2003 (Glass, Lacey, Carreon, & Hoover, 2007; Jemal, Ward, & Thun, 2007). According to the American Cancer Society, an estimated 269,800 women in the United States will be diagnosed with breast cancer in 2009. Of those women, 40,470 will die of the disease. Yet mortality rates have also been decreasing, by as much as 24 – 26% since 1990 (Berry et al., 2006; Cronin, Feuer, Clarke, & Plevritis, 2006; Jatoi, Chen, Anderson, & Rosenberg, 2007) leaving 229,330 women who become breast cancer survivors. Survival rates are estimated to be 77% for African American women and 90% for White women (American Cancer Society, 2007, 2009).

Today there is great interest in the quality of life of breast cancer survivors. The decrease in incidence plus the increase in survival rates are unquestionably
desired trends; however, the disease will, nonetheless, leave a psychological impression upon the woman diagnosed with breast cancer, as Bertero and Chamberlain Wilmoth write:

Despite the improvements in survival rates, a diagnosis of breast cancer initiates a complex adjustment process that may last for years, not only for the woman herself, but also for those around her. Survival statistics cannot capture the physiologic, psychologic, and sociologic impact of (breast) cancer … (2007, pp. 194-195).

**Breast Cancer**

Essential and accurate information is included below concerning the diagnosis of breast cancer and the various treatments, as well as side effects, associated with breast cancer. It is acknowledged that the actual biological and medical considerations and processes are far more complex. The facts shared below are intended to create an overall description of the breast cancer illness experience, beginning with diagnosis and continuing through to the completion of acute treatments.

**Breast Cancer Diagnosis**

The symptoms of breast cancer can include thickening of the breast, changes in the skin of the breast, or the discovery of a lump in the breast. However, breast cancer is often discovered with an abnormal mammogram without other presenting symptoms (Love, 1995). When the result of a mammogram is abnormal, additional
imaging procedures may be needed, such as ultrasound or magnetic resonance imaging (MRI) (Bedell, 2000; Silva & Zurrida, 2005). A biopsy is then performed to determine if the abnormality is benign or malignant.

There are numerous types of breast cancer as well as systems for classifying the disease. Very generally, breast cancer involves abnormal cell growth that may be confined to a limited area (non-invasive) or to numerous areas (invasive or infiltrating).

**Breast Cancer Treatment**

Treatment for breast cancer is determined by the type and stage of the disease. Surgical treatments include lumpectomy or mastectomy. A lumpectomy is the removal of the tumor and healthy tissue surrounding it while a mastectomy involves the removal of the entire breast. Axillary lymph node dissection is another surgical procedure, performed to assess lymph node involvement for those patients with invasive breast cancer. Lymph node involvement has implications for prognosis as well as treatment (Bedell, 2000; Silva & Zurrida, 2005).

Stages of disease are prognostic categories that describe the size of the tumor as well as lymph node involvement and presence/absence of metastases (i.e., spread) to other organs. Stage I breast cancer describes a tumor between 0 and 2 centimeters with no lymph node involvement. Stage II breast cancer describes either a small tumor with no lymph node involvement; a tumor that is between 2 and 5 centimeters, with or without lymph node involvement; or a tumor greater than 5 centimeters with no lymph node involvement. Stage III breast cancer describes a large tumor with
lymph node involvement or a large tumor along with signs that the cancer has spread
to the local tissue. Finally, Stage IV breast cancer involves an ulcerating or fixed
tumor that also shows definite metastases (Love, 1995).

Following lumpectomy or mastectomy, reconstructive surgery may be
performed, the goals of which are to restore symmetry between the breasts.
Reconstructive surgery may occur immediately or at a later time point. There are a
variety of methods for reconstruction, such as the use of implants or the transfer of
tissue from the abdomen or other muscles to the affected breast (Silva & Zurrida,
2005). An alternative to reconstructive surgery is the use of a prosthesis (Bedell,
2000).

Acute treatments for breast cancer include chemotherapy and radiation
therapy. Chemotherapy is administered intravenously or orally and is intended to
decrease tumor size and to reduce lymph node involvement (Silva & Zurrida, 2005).
The exact combination of medications, the dose, the intensity, and the duration of
chemotherapy depend upon the type and stage of the breast cancer (Bedell, 2000).
Side effects of chemotherapy are well-known and may include (in part): hair thinning
or hair loss; nausea; vomiting; weight gain; cardiomyopathy; inflammation of the
tissue lining the mouth; a low number of white blood cells; allergic reactions; anemia;
and fatigue. Cognitive abilities are affected such that there may be limited
concentration, memory impairment, and/or decreased mental alertness (Bedell, 2000;

Radiation treatments are administered externally through use of high-energy
rays, including x-rays and gamma rays. Treatments are given daily for five to six
weeks. Although the length of each treatment is only about 15 minutes, the patient is required to travel to and from the hospital or center, change into a hospital gown, wait for the actual treatment, and often juggle other medical appointments (Bedell, 2000). Side effects of radiation include fatigue as well as skin changes. Skin changes can range from tanning or drying of the skin to severe burning, which may temporarily interrupt the treatment schedule (Bedell, 2000). Other side effects include brachial plexopathy, which is pain, decreased movement, or decreased sensation in the arm and shoulder due to nerve damage (U.S. National Library of Medicine, 2009); radiation pneumonitis, which is a chronic cough or fever; or cardiac complications (Silva & Zurrida, 2005).

Hormonal therapy (i.e., the use of medications such as Tamoxifen) may be another component of the treatment plan (Bedell, 2000; Silva & Zurrida, 2005). The goals of hormonal therapy are to reduce rates of recurrence as well as mortality (Silva & Zurrida, 2005). Medications, such as Tamoxifen, are taken for five years beyond the completion of acute treatment (Silva & Zurrida, 2005). Side effects of hormonal therapy include hot flashes, weight gain, fatigue, and an increased risk for other cancers, such as endometrial cancer (Saunders Sturm, 2002; Silva & Zurrida, 2005).

Lymphedema is a side effect of breast cancer surgery and/or radiation therapy (Silva & Zurrida, 2005). Lymphedema is the swelling of the arm on the affected side caused by a blockage in the lymphatic system (Bedell, 2000; U.S. National Library of Medicine, 2009). Lymphedema can develop at any time after surgery and is very difficult to treat once it does occur. The goals of lymphedema treatment are to control the swelling of the arm and to prevent any infection (Bedell, 2000).
Completion of Breast Cancer Treatment

Breast cancer treatment(s) may last several days or several months. Once the treatment period is over, women often begin a process of integrating the experience and enter a post-treatment recovery phase that can last just as long as the treatments (Love, 1995). This psychological adjustment and reflection takes place largely on a personal or individual basis, as loved ones, family members, and medical professionals view the illness as being in the past (Lethborg, Kissane, Burns, & Snyder, 2000). Women may feel great relief at this time, but they also experience many fears and concerns, especially about recurrence. Therefore, at a time when fears and worries are becoming predominant, breast cancer survivors face a reduction in their support networks (Lethborg et al., 2000).

Interventions have been identified that would be most beneficial to women at the completion of treatment for breast cancer. Types of interventions include those that offer education and information about (1) what to expect physically and emotionally as well as (2) reducing stress, utilizing coping strategies, and accessing social support. Relaxation skills are often included as part of these interventions. In addition, providing women with opportunities to connect with other breast cancer survivors has been found to be very helpful. Such interventions may be formatted as group or individual sessions (Allen, Savadatti, & Gurmankin Levy, 2009).

Statement of the Problem

Breast cancer can be thought of as an illness experience, an experience that is, at the very least, challenging, stressful, and difficult. There are numerous types of
breast cancer and an even greater number of treatment combinations. Each treatment brings with it unique physical and emotional side effects. Even when treatments are completed and a woman is free of cancer, she still may experience physical and psychological distress. There are reminders of the disease, ranging from annual mammograms to daily medications (i.e., Tamoxifen), as well as a great deal of uncertainty and the ever-present threat of recurrence.

These psychological and physical concerns may continue for an extended period of time beyond the completion of treatment. The complex needs facing women at the end of treatment for breast cancer require adequate support and appropriate interventions (Lethborg & Kissane, 2003). Poor social support is associated with poor quality of life, as are depression, fear, and anxiety (Paskett et al., 2008). In turn, poor quality of life and psychological distress negatively impact disease outcomes (McGregor & Antoni, 2009). Enhanced psychosocial support is one factor that may positively contribute to the improved quality of life of breast cancer survivors. Research is required to determine and enhance those interventions that provide optimal psychosocial support.

**Purpose of the Study**

The purpose of the study was to investigate the effectiveness of a Relaxation Intervention, as a form of psychosocial support, for women at the completion of treatment for breast cancer. The goals of the intervention were to decrease depression, to improve mood, or affect, and to facilitate benefit finding. The Relaxation Intervention was formatted as four individual sessions, held once each week over the
course of four weeks. Each session included the discussion of a stress-related topic as well as guidance through a relaxation experience; each week, a new topic and a new relaxation technique were presented. The intervention had two conditions: Music-Assisted Relaxation (MAR) and Relaxation Alone (RA). MAR included the use of sedative, soothing music along with standard, spoken directives during the relaxation experience. RA included only standard, spoken directives. All other elements of the intervention were identical.

**Significance of the Study**

This dissertation has clinical significance for music therapists and others in the field of psycho-oncology as it describes the design and implementation of a music-based stress management intervention. Further, this dissertation presents results regarding the effectiveness of a stress management intervention in influencing depression, affect, and benefit finding among women with breast cancer. This knowledge may, in turn, be helpful in the development of similar interventions for women at various stages of treatment and/or for men and women with all types of cancer.

Not only will this study contribute to the existing body of knowledge concerning stress management interventions, it will also contribute information regarding the role and influence of music in such an intervention, as well as the role of music in influencing mood states. Many studies utilizing music in conjunction with relaxation involve a relatively limited exposure to music; in some cases, participants listen for as few as 15 minutes, oftentimes in a laboratory or other non-typical
listening environment. Further, many studies involve only one session and populations of undergraduate students and/or healthy adults.

This study is unique, therefore, in that it included a practical, clinical intervention taking place over four weeks. Each session included relaxation experiences lasting 20 to 30 minutes. In addition, participants were able to practice the techniques at home – and, for those participants receiving MAR, this included additional exposure to the music. This study also involved a focused clinical population, namely, women at the completion of treatment for breast cancer. It is believed that the results of this study will be of interest to music therapists, music psychologists, and psycho-oncologists.

The Research Questions and Hypotheses

Research Question #1

Question. Does Depression change as a function of Intervention Condition from baseline to post-intervention assessment?

Hypothesis. It is predicted that participants randomly assigned to MAR will show statistically significantly greater reductions in Depression than participants randomly assigned to RA.

Research Question #2

Question. Does Affect change as a function of Intervention Condition from baseline to post-intervention assessment?
**Hypotheses.** It is predicted that participants randomly assigned to MAR will show statistically significantly greater reductions in Total Distress than participants randomly assigned to RA. It is further predicted that participants randomly assigned to MAR will show statistically significantly greater improvements in Positive Affect, and statistically significantly greater reductions in Negative Affect, than participants randomly assigned to RA.

**Research Question #3**

**Question.** Does Benefit Finding change as a function of Intervention Condition from baseline to post-intervention assessment?

**Hypothesis.** It is predicted that participants randomly assigned to MAR will show statistically significantly greater improvements in Benefit Finding than participants randomly assigned to RA.

**Statistical Considerations**

**Quantitative data.** The effect of Intervention Condition on change over time among each of the Dependent Variables will be analyzed using a Mixed ANOVA. The between-subjects variable will be Intervention Condition (Music-Assisted Relaxation and Relaxation Alone) and the within-subjects variable will be Time (pretest and posttest). Underlying assumptions of ANOVA will be investigated and post-hoc analyses will be conducted as indicated (Keppel & Wickens, 2004).

**Qualitative data.** Qualitative data will be gathered using Participant Diaries and a Semi-Structured Interview. An inductive coding process will be used in the
analysis of the diaries and a deductive approach is planned for the analysis of the interviews (Patton, 2002; Strauss & Corbin, 1998).

**Terms**

**Completion of treatment for breast cancer.** For the purposes of this study, completion of treatment for breast cancer was defined as the period of time beginning three months prior to the completion of acute treatment and ending within one year following the completion of acute treatment.

**Depression.** Depression is defined as a trait mood state marked by the presence of depressive symptoms, such as: feelings of hopelessness, dejection, poor concentration, lack of energy, and inability to sleep (Soukhanov, 2004).

**Affect.** Affect is a general mood state comprised of positive affect and negative affect.

**Positive Affect.** Positive affect is defined as pleasurable engagement with the environment and generally relates to enthusiasm, energy, mental alertness, and determination (Watson, 1988). The Profile of Mood States – Short Form uses the following adjectives to define positive affect: alert, carefree, considerate, friendly, good natured, helpful, and trusting.

**Negative Affect.** Negative affect is defined as subjective distress and includes a variety of aversive mood states (Watson, 1988). The Profile of Mood States – Short Form uses the following adjectives to define negative affect: bitter, blue, deceived, furious, panicky, resentful, and terrified.
Benefit Finding. Benefit finding describes the process whereby an individual derives benefits or positive changes in his/her life as the result of a stressful or traumatic event. Simply stated, benefit finding is uncovering the positive in an otherwise negative experience (Antoni, 2003; Helgeson, Reynolds, & Tomich, 2006; Tallman, Altmaier, & Garcia, 2007).
CHAPTER TWO
Related Literature

This chapter includes a review of literature intended to support the research questions put forth in the previous chapter. It begins with a review of research involving stress management interventions designed for women with breast cancer. Then, clinical research involving music therapy and relaxation will be reviewed. Finally, supportive literature in the areas of music, depression, affect, and benefit finding will be presented.

Cognitive-Behavioral Stress Management Interventions for Women with Breast Cancer

There is a body of research detailing the structure and efficacy of cognitive-behavioral stress management (CBSM) interventions for women with breast cancer. Studies summarized here involved a 10 to 12 week group CBSM intervention. Women were typically recruited soon after their diagnosis, often 4 to 8 weeks following surgery. The interventions were designed for women with early stage disease (i.e., Stage 0, I, or II) and often involved follow-up throughout the first year following diagnosis. Sample sizes ranged from 29 to 154 (Antoni et al., 2001; Antoni et al., 2006a; Antoni et al., 2006b; Cruess et al., 2000; McGregor et al., 2004).

The intervention involved stress education as well as training in relaxation, conducted with small groups of 6 to 8 women. Each session included discussion of cognitively-based stress management skills, such as coping skills training, assertiveness training, and social support utilization training. In addition, each session
included a period of relaxation training. Here, various relaxation techniques were presented, including progressive muscle relaxation, imagery-based relaxation methods, and meditation. Sessions further included the supportive sharing among group members. Finally, homework assignments were given to encourage the practice and integration of skills into daily life (Antoni et al., 2001; Antoni et al., 2006a; Antoni et al., 2006b; Cruess et al., 2000; McGregor et al., 2004).

Numerous measures were used to test for treatment efficacy and fall into two broad categories, namely, mood measures and biological measures. Mood measures included distress or mood disturbance, depression, anxiety, as well as others. Biological assessments included measures of cortisol, a stress hormone, and immune system functioning. An attitudinal measure of benefit finding was also frequently used. The reported results have been very positive. Generally, CBSM has been found to decrease depression, to decrease anxiety, and to improve benefit finding; however, results concerning distress or mood disturbance have been mixed. In terms of biological measures, CBSM has led to reduced cortisol levels and improved immune system functioning (Antoni et al., 2001; Antoni et al., 2006a; Antoni et al., 2006b; Cruess et al., 2000; McGregor et al., 2004).

MUSIC

Music and Relaxation

Music Therapy and Relaxation

This section includes clinical studies involving music therapy and relaxation. Robb (2000) conducted a study designed to compare various relaxation methods.
among a healthy, adult population. She compared music with progressive muscle relaxation (M + PMR), progressive muscle relaxation (PMR), music listening, and silence/suggestion and assessed differences via state anxiety and perceived relaxation. A musical selection by artist Daniel Kobialka was used in the M + PMR condition and in the music listening condition (Robb, 2000). Sixty university students participated in the research. The mean age was 22.2 years with a range of 19 to 35 years. Participants were randomly assigned to one of the four conditions and were tested individually. Each condition lasted approximately 15 minutes. Measures included the Spielberger State Anxiety Inventory (STAI), a visual analog scale to determine perceived relaxation, and a posttreatment questionnaire (Robb, 2000).

STAI scores were analyzed using ANCOVA and revealed no significant differences among the four groups. A visual inspection of data indicated that the M + PMR group had the greatest reduction in anxiety. There were also no significant differences among the four groups in terms of perceived relaxation. Again, a visual inspection of the data indicated that the M + PMR group had the greatest change in relaxation from pretest to posttest. Overall, all conditions significantly reduced anxiety and increased perceived levels of relaxation, yet no condition emerged as being more effective than another (Robb, 2000). Robb concludes that the M + PMR and the PMR conditions offered the greatest focus of attention as PMR involves direct suggestions and instructions. She also concludes that music listening is most beneficial for achieving relaxation when the listeners are instructed as to how best focus their attention and use the music for the desired response. “The combination of an alert state of relaxation and improved focus of attention is optimal in providing
clients with coping strategies that alleviate stress symptoms, thus enabling them to confront their own sources of stress” (Robb, 2000, p. 17).

Results from Robb’s posttreatment questionnaire revealed four trends. First, it is natural for individuals to combine music-based and physically-based relaxation methods, such as progressive muscle relaxation with music. Second, music, when combined with physically-based techniques, appears to facilitate the focus of attention. Third, music seems to promote an alert state of relaxation. Finally, music brings with it enjoyment that may increase motivation to practice relaxation on a regular basis (Robb, 2000).

While Robb (2000) focused on a healthy population of normal adults, the remaining studies involve clinical populations. Robb, Nichols, Rutan, Bishop, and Parker (1995) conducted a study to determine if music-assisted relaxation would reduce stress and anxiety among pediatric burn patients. The study included 20 children, with ages ranging from 8 to 20, who were randomly assigned to one of two conditions: music-assisted relaxation or control (Robb et al., 1995).

Music-assisted relaxation included music listening, diaphragmatic breathing, progressive muscle relaxation, and imagery in addition to routine medical interventions. Participants in this condition practiced the relaxation techniques the day before surgery and again one hour before pre-operative medications were administered. Participants in the control condition received routine medical interventions only. Participants chose musical selections from one of the following: Daniel Kobialka, Tanya Goodman, or the Platinum Disc Corporation’s Relaxation Series (Robb et al., 1995).
Measures included Spielberger’s STAI for Children as well as physiological assessments (i.e., blood pressure, respiration rate, heart rate, and temperature). Analysis with the Mann-Whitney test revealed a statistically significant decrease in anxiety from pretest to posttest for those participants in the music-assisted relaxation condition. There was no change in anxiety for those participants in the control condition. In addition, anxiety posttest scores from the music-assisted relaxation condition were statistically significantly lower than those of the control group. There were no notable differences between groups among any of the physiological measures (Robb et al., 1995).

The final two studies involve music therapy for patients with coronary heart disease (CHD). Mandel, Hanser, Secic, and Davis (2007) combined music therapy, including relaxation, with standard cardiac rehabilitation and compared this protocol with standard cardiac rehabilitation. Music therapy sessions included musical experiences, counseling, and Music-Assisted Relaxation and Imagery (MARI). Sessions were conducted in a group format, held every other week for a total of four to six sessions. MARI was a part of every session and included music of Daniel Kobialka as a background for verbal suggestions and guided imagery. In addition, participants were given a recording of the MARI experience to encourage and facilitate home practice (Mandel et al., 2007).

A total of 103 participants with CHD were recruited and randomly assigned to one of the two treatment conditions, music therapy or control. Blood pressure was taken as a physiological measure. In addition, there were several psychological assessments, including: trait anxiety, measured with the STAI; depression, measured
with The Center for Epidemiologic Studies – Depression Scale (CES-D); overall distress, measured with the Brief Symptom Inventory (BSI); and health-related quality of life, measured with the Medical Outcomes Study 36-Item Short Form Survey (SF-36). Assessments were conducted pre and posttreatment; psychological measures were also mailed to participants at 1, 4, and 10 months posttreatment. Those participants in the music therapy group were assessed pre and postsession for state anxiety and stress. State anxiety was measured with the STAI and participants rated their stress verbally, using a scale from 0 to 10, before and after each music therapy session (Mandel et al., 2007).

Baseline data showed no statistically significant differences between the groups. Participants in the music therapy condition demonstrated statistically significantly greater decreases in systolic blood pressure from pre to posttreatment, while no differences in diastolic blood pressure were found. No significant differences were found between groups on posttreatment psychological measures; however, at 4-months posttreatment, the music therapy group demonstrated a statistically significantly greater decrease in trait anxiety and a statistically significantly greater improvement in both general health and social functioning (part of health-related quality of life) (Mandel et al., 2007).

Clinically significant differences, determined through calculation of effect size, were found between groups for health-related quality of life at 1-month posttreatment. Clinically significant differences were also found between groups for health-related quality of life, depression, trait anxiety, and overall distress at 4-months
posttreatment. The remaining sample size at 10-months posttreatment was too small to confidently conduct and interpret analyses (Mandel et al., 2007).

In the music therapy group, statistically significant improvements were found in state anxiety and stress from pre to postsession. At the 10-month follow-up, 82% of participants in the music therapy group indicated that they continued to use the stress management techniques (i.e., MARI tapes). The authors concluded that music therapy in combination with standard cardiac rehabilitation led to significant improvements in both physiological and psychological health-related outcomes (Mandel et al., 2007).

Mandel (2007) continued this line of research, examining the influence of music-assisted relaxation upon health outcomes among patients with CHD. Eight participants completed the study, comprised of one individual MARI training session and two follow-up appointments (described below).

Outcome measures included physiological, psychological, and behavioral changes. Results were compared from pre to post MARI training session and from baseline through two follow-up time points. Blood pressure was the physiological measure. Self-reported stress was one of several psychological measures, assessed pre and post MARI training session using an analog scale. Other psychological measures included: depression, measured with the CES-D; anxiety, measured with the STAI; and health-related quality of life, measured with the SF-36. These were assessed at baseline and at the two follow-up time points. Behavioral changes were assessed through self-report of the frequency of listening to the MARI CD at home. Finally, open-ended interviews were used to learn more about participants’ experiences with MARI (Mandel, 2007).
The MARI training sessions were held at a hospital outpatient clinic. Sessions were one hour long. During these sessions, the MARI CD was played for participants. This CD was comprised of the music of Daniel Kobialka and the author’s verbal relaxation suggestions. Participants experienced the relaxation and then were asked to share their thoughts and feelings about it. They were then given instructions for in-home use and practice of the MARI CD (Mandel, 2007).

Participants met individually with the researcher for their follow-up appointments. Follow-up appointments were held approximately two weeks after study enrollment and four months after the first follow-up. Meetings were held at one of two outpatient clinics (Mandel, 2007).

Results indicated that anxiety, stress, and systolic blood pressure significantly decreased from pre to post MARI training session; however, results must be interpreted with caution due to the small sample size. No significant differences were found over time, that is, from baseline to the follow-up time points, for blood pressure, depression, or anxiety. An important, clinically relevant finding was the improvement in mental health, measured as part of the SF-36, from baseline to the 4-month follow-up and from the first follow-up to the second follow-up (Mandel, 2007).

The clinical, music therapy studies reviewed above are included to highlight findings regarding the use of music as part of a relaxation intervention. Taken together, results show that such interventions reduced blood pressure (Mandel, 2007; Mandel et al., 2007), reduced anxiety and stress (Mandel, 2007; Mandel et al., 2007; Robb, 2000; Robb et al., 1995), and enhanced relaxation (Robb, 2000). In addition,
music and relaxation interventions were found to improve mental health (Mandel, 2007), general health (Mandel et al., 2007), and social functioning (Mandel et al., 2007).

**Music and Physiology**

It is often said, “Music soothes the savage beast.” It also readily accepted that music can influence human behavior. How, precisely, does music soothe or influence our behavior? There is abundant research delineating music’s effect on physiological variables; studies examining the use of sedative music to elicit a relaxation response will be summarized here.

Sedative music has particular characteristics that distinguish it from more energizing, or stimulative, music. Those characteristics include: slow, steady tempi – at or below resting heart rate; legato phrasing; regular, smooth rhythm with a lack of strong, percussive elements; gradual, predictable changes in musical elements; soft to moderate dynamics with predictable changes; simple, sustained melodies with narrow pitch ranges and stepwise progression; and consonant harmonies (Mandel et al., 2007; Radocy & Boyle, 2003; Robb et al., 1995).

Bartlett (1996) reviewed 120 years of research, and at least as many studies, in the field of music and physiology. The reviewed studies indicate that music does influence bodily systems, with a majority of studies reporting physiological changes in desirable directions. For example, sedative music has been found to decrease heart rate, decrease blood pressure, and reduce muscular tension in numerous studies. Sedative music also influenced other physiological systems, such as galvanic skin
response, skin temperature, and respiration rate, although with less predictable or reliable results.

Knight and Rickard (2001) conducted a study to determine how music influenced physiological variables when participants were presented with a cognitive stressor. Participants were undergraduate students. Anxiety was measured using Spielberger’s STAI. In addition to anxiety, blood pressure, heart rate, cortisol, and salivary IgA (an index of immune function) were measured at the beginning of the session to establish pre-stressor levels. Then participants were informed they would be giving a presentation within their area of study, a task intended to induce stress and anxiety. Anxiety, blood pressure, and heart rate were measured a second time (Knight & Rickard, 2001).

Half of the 87 participants sat in silence following the presentation of the cognitive stressor and throughout the “preparation” period, which lasted approximately 23 minutes. The remaining participants, those in the music condition, listened to music during the presentation of the stressor as well as throughout the “preparation” period; they heard Pachelbel’s “Canon in D Major” repeated three times. Anxiety, blood pressure, heart rate, cortisol, and salivary IgA were measured a final time to establish post-stressor levels. It is unclear what type of method was used to assign participants to a condition (Knight & Rickard, 2001).

Results indicated that for those participants in the control condition, the presentation of the stressor did increase anxiety, blood pressure, and heart rate. These increases were not seen for those participants in the music condition. In fact, there was a small reduction from baseline to post-test assessment. The effects of music
upon anxiety, blood pressure, and heart rate were statistically significant (Knight & Rickard, 2001).

Burns, Labbe, Arke, Capeless, Cooksey, Steadman, and Gonzales (2002) studied the effects of various styles of music on measures of stress. Participants were undergraduate students and were asked to listen to music (or silence, in the control condition) before completing a challenging mental task. Participants were randomly assigned to one of four conditions: listening to classical music, to rock music, to relaxing music of their own choosing, or to silence (Burns et al., 2002).

Level of relaxation was assessed using a 7-point, Likert-type scale and anxiety was assessed using Spielberger’s STAI. Participants completed these two measures before being told of the upcoming mental task. After being presented with the mental task, participants entered the listening phase. All participants sat in silence for 10 minutes. Those participants in the control condition sat in silence for an additional 20 minutes, while participants in the music conditions listened to music for 10 minutes followed by 10 minutes of silence. At the conclusion of the listening phase, levels of relaxation and anxiety were measured again (Burns et al., 2002).

Results revealed that participants in all conditions experienced an increase in relaxation. The control group found the largest increases in relaxation, followed by the self-selected music group, the classical music group, and the rock music group, respectively. Participants in all conditions experienced the desired decrease in state anxiety. The control group found the largest decrease in state anxiety, followed by the self-selected music group, the classical music group, and the rock music group, respectively (Burns et al., 2002).
Pelletier (2004) conducted a meta-analysis of 22 studies utilizing music in combination with active relaxation techniques. There were numerous noteworthy findings, findings that are relevant to the current study and particularly to the methods described in the next chapter. For example, music in combination with relaxation techniques has been shown to significantly decrease arousal caused by stress, with a large overall mean effect size (Cohen’s $d = .6711$). Sessions held within a hospital or medical/counseling office are very successful, with large overall effect sizes ($d = .61$ and $.94$, respectively). Relaxation interventions are very appropriate with female participants, with a large overall mean effect size ($d = .76$ compared to $d = .50$ for male participants). Pelletier also examined the effectiveness of specific relaxation techniques (Pelletier, 2004).

Verbal suggestion with music was the most effective technique in reducing stress ($d = 2.07$), followed by music with vibrotactile stimulation ($d = 1.20$), music-assisted progressive muscle relaxation ($d = .72$), a combination of techniques with music ($d = .57$), and passive listening ($d = .54$). All of these techniques have mean effect sizes that are quite robust. Multiple sessions were more effective than a single session ($d = .93$ and $d = .63$, respectively). Selections of music supported by research were more effective than selections chosen by, or preferred by, participants ($d = .83$ and $d = .51$, respectively). Finally, individual sessions were found to be more effective than group sessions ($d = .79$ and $d = .46$, respectively).

Much research has been conducted regarding music’s impact on physiological systems; the above summary indicates that music can, and does, induce or elicit a relaxation response. Listening to sedative music has been found to reduce heart rate
(Bartlett, 1996; Knight & Rickard, 2001; Scheufele, 2000), reduce blood pressure (Bartlett, 1996), decrease muscle tension (Bartlett, 1996), decrease anxiety (Burns et al., 2002; Knight & Rickard, 2001), and increase relaxation (Burns et al., 2002). The use of sedative, relaxing music within a congruent, relaxing environment may maximize these effects, as the following studies suggest.

Music and Context

North and Hargreaves (1997) explored musical preference as it presents itself in everyday listening situations. They formulate a new theory of musical preference, one that challenges the long-held theory of arousal potential. The theory of arousal potential states that preference, or liking, for music will reach an optimal level with a corresponding moderate level of stimulus complexity, creating an inverted-U relationship (Berlyne, 1971; North & Hargreaves, 1997). North and Hargreaves argue that arousal is only one of many factors determining musical preference. They, as well as others, have wondered if the theory of arousal potential will explain musical preferences in common, everyday listening situations (North & Hargreaves, 1997).

In one study, North and Hargreaves asked two groups of participants to either exercise or relax. Exercise was chosen as an arousing task while relaxation was chosen as a non-arousing task. The groups were given the choice to listen to music with either high or low arousal potential while either exercising or relaxing. Results indicated that participants preferred to listen to music with high arousal potential while exercising and music with low arousal potential while relaxing. Further, in each case, the preferred music was rated as being typical of the types of music usually
listened to in similar situations. In short, participants chose music that matched the arousal-based goal of the task (North & Hargreaves, 1997).

North and Hargreaves (2000) continued to study music listening in everyday contexts. In their subsequent study, participants were asked to either exercise or relax while listening to music. Participants also chose music having high or low arousal potential. An Operant Music Listening Recorder was used to measure how long participants listened to each piece of music. In addition, participants rated their preference for each of the pieces as well as the appropriateness of the music for their particular task (North & Hargreaves, 2000).

The prototypicality model predicts that participants in the exercise condition will spend more time listening to, and will prefer, music with high arousal potential and that participants in the relaxation condition will spend more time listening to, and will prefer, music with low arousal potential. Forty-eight undergraduate students participated in the research. Results confirmed the hypotheses in accordance with the prototypicality model: participants in the exercise condition rated the music with high arousal as more appropriate, and spent more time listening to it; participants in the relaxation condition rated the music with low arousal as more appropriate, and spent more time listening to it (North & Hargreaves, 2000).

The authors concluded that participants preferred music that was appropriate for the listening situation and that they chose music that would optimize their response to the given situation (North & Hargreaves, 2000). “When participants are motivated to achieve a given arousal state (such as relaxation or exercise), they select
music that should help them achieve their goal of arousal polarization, and they do so by selecting appropriate music” (North & Hargreaves, 2000, p. 57).

While arousal-based goals may be important in determining musical preference in everyday situations, music preference also depends, in large part, upon the characteristics of the listening situation (North & Hargreaves, 2000). In a later study, North, Hargreaves, and Hargreaves (2004) described the relationships among the music, the context, and the listener as well as the interplay among these dimensions (North, Hargreaves, & Hargreaves, 2004).

North, Hargreaves, and Hargreaves (2004) argue that listening contexts essentially determine the value of a musical experience for an individual listener. To that end, they conducted an exploratory study examining the uses and functions of music in everyday life. Their study included 346 participants who responded to text messages sent, at random times, to their cell phones. Upon receipt of this message, the participant completed a brief survey to indicate if he/she was listening to music and, if so, who they were with, what they were listening to, when they were listening, where they were listening, and why they were listening (North et al., 2004).

Results revealed that there was a great deal of exposure to music among all participants. The majority of music listening episodes occurred in the presence of other people, as opposed to in isolation. A variety of styles were heard, with popular music by far the most common. The majority of music listening episodes took place during leisure time. In addition, most often, music was listened to for enjoyment, to pass the time, or to create the right atmosphere (North et al., 2004).
Participants demonstrated varying levels of engagement with music. An interesting finding was that the music itself was rarely the focus of music listening episodes. That is, music was oftentimes a “backdrop” (p. 72) to another task or “taken for granted” (p. 75) as part of another activity. DeNora (2005) describes the use of music to organize and structure another activity as “musical framing.” Juslin and Laukka (2004) also found that music listening often occurs as a background to other mundane, everyday activities, and that the music itself was the main focus of an activity only some of the time (Juslin & Laukka, 2004). North et al. (2004) conclude that “our relationship to music in everyday life may well be complex and sophisticated, but it is not necessarily characterized by deep emotional investment” (North et al., 2004, p. 75).

The above studies show that many factors can influence liking or preference for music. The prototypicality model suggests that music congruent with a given context will be most preferable, such as listening to soothing, sedative music while relaxing. Such music would match the goals of the activity or situation (in this case, relaxation) and could, in turn, maximize the individual’s response to the situation (North & Hargreaves, 1997, 2000). Musical preference and responses to music, then, depend on the connections among the music, the context, and the listener (Gabrielsson, 2001; North et al., 2004; North & Hargreaves, 2004; Scherer & Zentner, 2001; Sloboda & Juslin, 2001).

Music is always heard in a social context, in a particular place and time, with or without other individuals being present, and with other activities taking place which have their own complex sources of meaning and emotion. The
emotional response to the music is coloured, and possibly sometimes completely determined, by these contextual factors … the impact of music on emotion is not direct but interdependent on the situations in which it is heard (Sloboda & O’Neill, 2001, p. 415).

Music and Emotion

There are numerous approaches to the study and the conceptualization of music and emotions. A neuropsychological approach is undertaken here, an approach that complements the mood literature forthcoming. This structure is adapted from the research of Thaut (2005a, 2005b), who argued that common to all theories of music and emotion is the importance of the arousal-inducing potential of music, which then leads to unique affective experiences (Thaut, 2005b).

Neuropsychology and Music

**Stimulus.** Studies of music and emotion all include a “stimulus,” which is, of course, some type or style of music. Unique to this dissertation is the use of music as a partner to spoken voice, compared with spoken voice only. Therefore, in this study, there are two forms of a “stimulus”: (1) music and voice (MAR) or (2) voice alone (RA). In turn, these stimuli are a part of a larger intervention with specific aims and goals to be described in detail in the next chapter.

**Limbic system.** The limbic system is involved in emotional experiences, including arousal, attention, emotion, behavior, and learning (Thaut, 2005b). This system receives messages from both the sensory organs and from the cortex. The
The limbic system is comprised of the amygdala, thalamus, hypothalamus, pituitary gland, hippocampus, and other subcortical structures (Hodges, 1996; Thaut, 2005b). The amygdala has a role in subjective feeling experiences, including aggressive and fear-based actions. The thalamus sends sensory information to the cortex and thereby can activate association areas of the cortex. The hypothalamus is responsible for the regulation of physiological arousal. The pituitary gland releases hormones into the bloodstream (Hodges, 1996; Thaut, 2005b).

The involvement of the limbic system in the perception of, and response to, music has been demonstrated through a series of connections, beginning with emotional responses that do not involve music and the identification of limbic structures involved in those responses. The next step involves the parallel emotional responses found in response to music. Since the emotional/behavioral responses are similar, it follows that similar brain structures and processes must be involved in each case – namely, the limbic system and the brain reward system (Thaut, 2005b).

**Brain reward system.** The limbic system is responsible for the experience of reward and pleasure. The brain reward system has pathways throughout the limbic system and the two systems share many of the same structures (i.e., amygdala, hippocampus, and cortical areas). The two systems are clearly connected and closely related. In addition, these same brain areas are involved with the processing of music. Stated another way, both the limbic system and the brain reward system are activated through music (Thaut, 2005b).

The brain reward system will be described in detail as part of the forthcoming discussion of positive affect.
Stimulus properties. While the neurological processes that occur in response to music do so without much conscious awareness or effort on the part of the listener, many researchers/philosophers feel that the unique characteristics of the music are critical to affective responses. As listeners, we are quite consciously aware of the subtle nuances of music. These nuances, or properties, provide an “immediate reward experience” and lead to arousal and affect (Thaut, 2005b, p. 23). They can be divided into three categories: psychophysical properties, collative properties, and ecological properties.

Psychophysical properties. Psychophysical properties refer to the sound qualities of music (Thaut, 2005a). Together, these properties create the listener’s experience of activation or energy in response to the music. These properties are described as involving simultaneous or holistic processing (Berlyne, 1971; McMullen, 1996; Thaut, 2005b). In the current study, psychophysical properties include the unique frequencies, intensities, waveforms, and duration of sounds from each respective intervention condition. MAR includes the pairing of music with spoken voice, each with unique individual properties. The combination of music and voice provides a contrast to the spoken voice of RA; each condition, then, is distinctive in terms of psychophysical properties.

Collative properties. Collative properties are the structural sound properties of music. Listeners make comparisons and judgments along various scales while listening to music. These scales or continua include: familiar-novel, simple-complex, expected-surprising, ambiguous-clear, and stable-variable (Berlyne, 1971; McMullen, 1996; Thaut, 2005b). These comparisons and judgments are grounded in the basic
structures of music – its melody, harmony, rhythm, and form (Thaut, 2005a). In the current study, MAR includes music as a partner to spoken voice. This combination may be more novel, more complex, and more interesting to listeners than voice alone. MAR will involve a different comparative process than RA as the stimulus itself is different, containing more information and creating a unique affective response.

Together, psychophysical properties and collative properties may be considered part of the intrinsic sources of emotion in music. Intrinsic sources are those found within the music itself, created by the global perception of music as well as the individual structures or characteristics of the music (Sloboda & Juslin, 2001). Scherer and Zentner use the term “structural features” to describe the psychophysical and collative properties of music (2001).

Ecological properties. Ecological properties of music include the associations between a particular piece, or style, of music and specific events and/or memories from the listener’s past (Berlyne, 1971; Thaut, 2005b). In the current study, practice of relaxation at home is encouraged. Listeners may associate MAR with both the positive context and supportive atmosphere of the intervention, as well as the positive feelings experienced during the sessions or during home practice. These properties constitute an extrinsic source of emotion in music, based in relationships between music and “a range of non-musical factors which also carry emotional messages of their own” (Sloboda & Juslin, 2001, p. 94).

Affective experiences with music. According to Thaut (2005b), what all theories of emotion in music have in common is the “concept of the arousal-inducing potential of music, which leads to affective experiences” (p. 7). The arousal potential
of music is found in the unique properties of music, described above. Affective experiences could include changes in emotion, mood, alertness, or motivation (Thaut, 2005b). Brown and Theorell (2006) also note the importance of arousal when considering affective experiences with music. Because music is associated with pleasurable changes in arousal and because moderate levels of arousal are rewarding, it follows that music is a source of rewarding and pleasurable affective states (Brown & Theorell, 2006).

Individuals often use music to match, and accentuate, arousal states or, conversely, to modulate undesired arousal states. Brown and Theorell describe a pathway through which music can impact arousal and mood. In their “Music-General Hypothesis,” music influences arousal as well as attention and, in turn, other global psychological processes. Music creates a pleasurable state of relaxed vigilance that promotes a variety of affective and cognitive processes. Their pathway can be described as follows: pleasing music leads to increased arousal/attention, in turn increasing positive affect, which then enhances cognitive performance (Brown & Theorell, 2006).

Functions of music. Music can alter or enhance mood as well as the quality of an event or experience. Hays and Minichiello (2005) conducted a qualitative study using in-depth interviews to explore the meaning and uses of music in the lives of older adults. Music was found to be associated with self-identity and understanding. Participants felt that music allowed for a deep level of self-exploration and that, through music, they could “know and reflect upon their own personhood” (Hays & Minichiello, 2005, p. 440). Involvement with music allowed participants to become
more aware of, to reflect on, and ultimately to integrate their emotions. Music harmonized patterns of thinking and feeling and cued more positive mental/emotional states (Hays & Minichiello, 2005).

Music was also associated with well-being and health. Participants indicated that music contributed to their sense of good health. They were “distracted from their medical conditions” and also “felt uplifted physically and psychologically” (Hays & Minichiello, 2005, p. 444). Several participants stated that music was a part of their recovery from illnesses and/or medical procedures. Music was found to have a “profound psychological impact,” leading to a sense of wholeness, happiness, and contentment (Hays & Minichiello, 2005, p. 444). Participants also reported feeling more hopeful, cheerful, and more positive about life as the result of engaging with music. One stated that her music listening was essentially “self-applied music therapy … it cheers me up if I’m sad or feeling unwell” (Hays & Minichiello, 2005, p. 444) while another described her musical involvement as “just incredible … a totally emotional experience” (Hays & Minichiello, 2005, p. 449).

Music was found to influence cognitive functioning as well as emotional functioning. Hays and Minichiello (2005) noted the effects of music on cognition in their qualitative study. As mentioned previously, music was found to cue positive mental states and also to “align structures of consciousness” (p. 445). Participants used music to relieve stress and anxiety which provided a means of “creating another mind space for themselves” (p. 446). Music stimulated imaginative, creative thinking and positively engaged all cognitive processes. As one participant said, “So the more … I get of the music that I love, the better I feel. It’s stimulating for my brain. I think
it gets me awake, thinking well, functioning well” (Hays & Minichiello, 2005, p. 443).

Taken together, the above studies show that the unique properties of music can influence physiological, emotional, and cognitive functioning in positive ways. Listening to sedative, soothing music can enhance relaxation and reduce anxiety or stress. Music offers an immediate reward experience, as noted by Thaut (2005b), with increased arousal and attention and, in turn, a positive affective experience.

**MOOD**

**Depression**

Breast cancer has been described as an illness experience. The period of diagnosis and treatment, as well as the months following the completion of treatment, are stressful, even under the best of circumstances. Women may experience distress regarding the diagnosis itself, its implications, or as a side effect from a specific treatment. Lethborg, Kissane, Burns, and Snyder describe this transition as follows:

The point when treatment was completed was not the end of the experience. Rather, when treatment was over, some threat and uncertainty were reduced, enabling, at last, the opportunity to explore the existential issues raised by the diagnosis of breast cancer. Completion of treatment, with its own physical and psychological issues, was not the end of the trauma but was an important milestone for these women (Lethborg et al., 2000, p. 86).

Rates and incidence of depression among women with breast cancer are hard to pinpoint due to the particular medical and psychosocial factors, associated with
breast cancer treatment, which may influence women’s mood states (Fann et al., 2008). The estimated rate of depression among women with breast cancer falls between 10% and 37% (Burgess et al., 2005; Deshields, Tibbs, Fan, & Taylor, 2006; Fann et al., 2008; Kissane et al., 2004; Wong-Kim & Bloom, 2005). Many researchers report rates of depression are highest at the time of diagnosis and within the first year following diagnosis, perhaps as high as 48% (Burgess et al., 2005; Fann et al., 2008; Wong-Kim & Bloom, 2005). This rate then decreases with time, becoming as low as 15% five years following diagnosis, similar to rates within the healthy population of women (Burgess et al., 2005).

Depression has been found to influence the severity as well as the number of side effects reported among women with breast cancer. Depression may heighten feelings of fatigue or anxiety. Further, depression can increase the perception of physical pain and fatigue; depression, pain, and fatigue are correlated with each other and with general health status. It can ultimately lead to noncompliance with treatment regimes, which in turn can impact long-term outcomes. In addition, some studies suggest that depression may negatively affect the immune system as well as long-term survival (Fann et al., 2008).

Depression is associated with various treatments for breast cancer. For example, women may become distressed following surgery, particularly following mastectomy. Chemotherapy, too, is associated with depression (Fann et al., 2008). Chemotherapy can cause early menopause, which itself can lead to changes in mood and challenges to one’s coping. Tamoxifen has also been found to influence mood,
with some women discontinuing use of this medication due to depression (Fann et al., 2008).

In addition to emotional functioning, depression can negatively influence cognitive functioning. At the same time, cognitive impairment is a side effect of chemotherapy, a side effect that can last months or even years following the completion of treatment. Women may experience limited concentration, memory impairment, or decreased mental alertness (Bedell, 2000; Fann et al., 2008; Silva & Zurrida, 2005; Soukhanov, 2004).

DeShields, Tibbs, Fan, and Taylor (2006) conducted a study to examine psychological adjustment following the completion of treatment for breast cancer. This study included 84 participants. The mean age was 55.6 years with a range of ages from 28 to 87 years. All participants had breast cancer, with a majority (83%) having Stage I or II disease (DeShields et al., 2006).

Participants were assessed for depression, anxiety, and quality of life. Assessments included the CES-D, the STAI, and the Functional Assessment of Cancer Therapy-Breast (FACT-B). The FACT-B is a measure of quality of life, including physical well-being, social/family well-being, emotional well-being, functional well-being, and breast cancer-related concerns. These assessments were administered over the telephone at three time points: on the last day of radiation treatment and then again three and six months following treatment completion (DeShields et al., 2006).

CES-D scores were used to establish patterns of depression among the participants. Five patterns were revealed: Never Depressed, Become Depressed,
Recover, Stay Depressed, and Vacillate. Participants who are “Never Depressed” have CES-D scores falling below the threshold for clinically significant depression at all time points. Participants who “Become Depressed” have scores below the cutoff score of 16 at the initial time point, but at, or above, the cutoff at the remaining time points. Participants who “Recover” begin with clinically significant depression at baseline; their scores then decrease and fall below the cutoff score at the remaining time points. Participants who “Stay Depressed” have CES-D scores at, or above, the threshold at all time points. Finally, some participants had scores and patterns of depression that vacillated (“Vacillate”) and did not fit into the above groups (DeShields et al., 2006).

At baseline, that is, at the completion of radiation treatments, the mean score on the CES-D for all participants was 12.7. This score is below the cutoff of 16 yet higher than the established normal score for adults (9.25). Although the mean score for the entire group was below the threshold for clinically significant depression, many participants had scores at or above the threshold (30%). A statistically significant decrease in depression scores was found over time, when comparing baseline scores with scores at the third time point. Depression scores were found to be stable between the second and third time points, that is, from three to six months following the completion of treatments (DeShields et al., 2006).

Results suggest that those participants who experience clinically significant depression at the close of their treatments (“Recover” and “Stay Depressed”) are also more anxious and report a poorer quality of life. In addition, participants who are depressed at the final time point (“Become Depressed” and “Stay Depressed”) also
have higher anxiety and lower quality of life than the “Never Depressed” group. Finally, the “Vacillate” group showed the greatest anxiety and poorest quality of life compared with the “Never Depressed” group at every time point (DeShields et al., 2006).

Results of this research further indicate that depression is associated with higher anxiety and poorer quality of life. In addition, the greatest improvements in both anxiety and quality of life were found in the “Recover” group, indicating that improvements in depression are also associated with improvements in other facets of psychological health (DeShields et al., 2006).

Another group of researchers studied psychological adjustment following the completion of treatment for breast cancer. Allen, Savadatti, and Gurmankin Levy (2009) conducted focus group interviews with 47 breast cancer survivors who had finished their treatments within the past year. The interviews included questions concerning the transition from breast cancer patient to breast cancer survivor (Allen et al., 2009).

The authors found than many women experienced emotional distress following the completion of treatment. Some participants reported unpredictable feelings of anguish, which one woman described as an emotional roller coaster. Other participants felt more depressed during this time. One participant stated, “I went into a severe depression after treatment” and another shared, “After the treatment was over [the distress] was so much worse” (Allen et al., 2009, p. 75).

In addition to feelings of distress and depression, participants indicated losses associated with this transition. Participants were aware of the loss of consistent
support and contact with medical professionals and their new responsibility to
monitor their own health and continued recovery. One woman described her concern
about differentiating normal aches and pains from signs of breast cancer recurrence.
Many participants seemed to equate breast cancer treatments, themselves, as
something tangible and active they were doing to fight, and beat, the cancer (Allen et
al., 2009).

The authors conclude that while the completion of treatment for breast cancer
is an important and long-awaited milestone, it is also a time of “great hardship,
uncertainty, and isolation for many women” (Allen et al., 2009, p. 76). Breast cancer
survivors experience psychological distress stemming from loss of support and
contact with the medical professionals as well as the fear of recurrence paired with
the responsibility for monitoring one’s own health (Allen et al., 2009).

In summary, depression is clearly undesirable among women at the
completion of treatment for breast cancer. Depression can heighten the severity of
side effects as well as feelings of fatigue and pain (Fann et al., 2008). Other studies
have shown that depression is associated with higher anxiety and poorer quality of
life and, further, that improvements in depression lead to other improvements in
psychological health (DeShields et al., 2006). Finally, and more generally, women
report unease during this post-treatment recovery phase as well as a range of negative
feelings, such as anger, uncertainty, fear, and irritability (Allen et al., 2009; Kerenyi,
2007).
Affect

This section summarizes research involving both negative and positive affect. Particular attention will be given to the relevance of each as applied to women at the completion of treatment for breast cancer.

There are numerous theories and models of emotion and emotional processing. Some researchers posit that there are discrete or basic emotions while others argue that emotions range along a continuum. A thorough presentation of these theories is beyond the scope of this chapter. The two-dimensional, circumplex model of emotion has been adopted for the purposes of this paper. This model indicates that all affective states are born of two neurophysiological systems, the valence and arousal systems, and that affective states are the result of the interplay between these two independent systems (Posner, Russell, & Peterson, 2005; Watson, Wiese, Vaidya, & Tellegen, 1999).

Negative Affect

Negative affect describes subjective distress and includes a variety of aversive mood states, including feelings of anxiety or fear, irritability, guilt, and the like. High negative affect includes feelings of anger and disgust while low negative affect includes feelings of calmness and relaxation (Watson et al., 1999). Negative affect is thought to characterize both anxiety and depression, while low positive affect characterizes depression only (Kring, Persons, & Thomas, 2007; Nutt et al., 2007).

Research has established that negative affect and positive affect are essentially independent of each other (Watson, 1988). Negative affect has been associated with
greater health complaints and physical symptoms. It may be that individuals high in
negative affect are more likely to be aware of physical discomfort or that these
individuals exaggerate their health concerns (Dua, 1993; Watson, 1988). They have
also been described as hyper-vigilant (Watson, 1988). Negative affect is further
associated with poor psychological health (Dua, 1993), greater perceived stress (Dua,
1993; Watson, 1988), as well as the use of more energy and a greater strain on bodily
resources (Watson et al., 1999).

Given the above findings – namely, that negative affect leads to greater health
complaints and physical symptoms, it is highly undesirable for women at the
completion of treatment for breast cancer to experience negative affective states. It
could be that a negative feedback mechanism is created, such that greater awareness
of physical symptoms leads to more visits to the doctor which leads to higher aversive
mood states and so on.

**Positive Affect**

Positive affect describes an individual’s level of pleasant engagement with the
environment. High positive affect includes feelings of enthusiasm and energy as well
as mental alertness (Watson, 1988). Low positive affect is thought to be characteristic
of depression (Kring et al., 2007; Nutt et al., 2007) and consists of loss of pleasure,
loss of interest, and loss of energy or fatigue (Nutt et al., 2007).

Positive affect is associated with greater activation of the left frontal lobe
while negative affect is associated with greater activation of the right frontal lobe.
These differential areas of activation are particularly strong in the prefrontal cortex (Posner et al., 2005; Watson et al., 1999).

**Neuropsychology of Positive Affect**

**General brain areas.** Depression is characterized by low positive affect, as stated previously, with symptoms encompassing sadness, loss of pleasure or interest, and loss of energy. Researchers have determined the specific brain areas related to each of these symptoms.

Sadness and depressed mood are associated with abnormal neuronal activity in the medial prefrontal cortex, including the anterior cingulate and the orbitofrontal cortex (Nutt et al., 2007). Loss of pleasure or interest is thought to be caused by a dysfunction in the mesocorticolimbic dopamine system, which innervates various limbic structures and cortical areas. The limbic structures include the nucleus accumbens, the amygdala, and the ventral hippocampus; the cortical areas include the prefrontal cortex (Nutt et al., 2007). Loss of energy and fatigue can be conceptualized as physical and/or mental. Physical fatigue is associated with abnormal neuronal activity in the striatum and cerebellum. Mental fatigue is associated with abnormal neuronal activity in cortical areas, including the dorsolateral prefrontal cortex (Nutt et al., 2007).

**The brain reward (valence) system.** The brain reward system consists of several systems that process reward and pleasure. These systems are responsible for the detection and prediction of reward, for the representation of reward value, and for the representation of goals (Forbes & Dahl, 2005). One such system is the
mesocorticolimbic dopamine system, with connections from the ventral tegmental area (VTA) to both limbic and cortical areas.

Figure 1. Dopamine projection areas in the brain. The dopamine-producing areas are shaded in gray with dopamine projections illustrated with dashed lines. NAc = nucleus accumbens; VTA = ventral tegmental area; SN = substantia nigra; LC = locus ceruleus (Ashby, Isen, & Turken, 1999, p. 533).
The limbic areas of the mesocorticolimbic dopamine system include the nucleus accumbens, the amygdala, and the hippocampus (Ashby, Isen, & Turken, 1999; Nutt et al., 2007; Posner et al., 2005). The nucleus accumbens is thought to be an important regulator of pleasure (Nutt et al., 2005). The amygdala is a component of the memory system and associates new stimuli with reward or punishment (Ashby et al., 1999). It also shows increased activation during the receipt of reward and responds to the value of reward (Forbes & Dahl, 2005). The hippocampus, another component of the memory system, consolidates episodic memories (Ashby et al., 1999).

The cortical areas of the mesocorticolimbic dopamine system include the prefrontal cortex and the anterior cingulate (Ashby et al., 1999; Nutt et al., 2007; Posner et al., 2005). The prefrontal cortex is a brain area involved with determining the future consequences of an emotional decision. It also integrates, organizes, and structures information regarding the sensations of reward with prior experiences within life contexts. The prefrontal cortex is involved in the creation and recognition of emotions through associations between neurophysiological and both internal and external cues (Posner et al., 2005). Portions of the prefrontal cortex show increased activation during the receipt of reward and respond to the value of reward, like the amygdala (Forbes & Dahl, 2005). It is also thought to be part of the memory system, involved with working memory (Ashby et al., 1999).

The anterior cingulate is a key component of the attention system, involved with the direction of executive attention. It is also part of other cognitive processes, such as the selection of cognitive perspective, conditioned emotional learning,
assessment of motivational content, assignment of emotional valence to stimuli, and error monitoring. In addition, the anterior cingulate is involved with social interaction (Ashby et al., 1999).

**Cognitive processing.** The VTA, described above as part of the mesocorticolimbic dopamine system, connects with numerous brain areas that are involved in cognitive processes. Ashby, Isen, and Turken (1999) argue that the experience of reward leads to increased dopamine levels, which then lead to increased positive affect which, finally, lead to enhanced cognitive processing.

Positive affect is desirable as it leads not only to pleasant, positive emotional experiences but also to enhanced cognitive processing (Ashby et al., 1999; Isen, 2005). Research has shown that positive affect leads to improved problem solving, creativity, and organization of information. Positive affect allows individuals to organize information in various ways, to consider alternative perspectives, and to think flexibly (Ashby et al., 1999). It “promotes careful, thorough, open-minded, and systematic processing” (Ashby et al., 1999, p. 543).

Positive affect is also associated with flexible and effective coping strategies as well as strategies to deal with negative events or information. People are better able to process necessary and important negative information. Clearly, positive affect is an important mood state and is easily induced through common, everyday situations and events (Ashby et al., 1999). The positive influence on cognitive processing may facilitate the experience of benefit finding.
Benefit Finding

Benefit finding describes the process whereby an individual derives benefits or positive changes in his/her life as the result of a stressful or traumatic event. Simply put, benefit finding means finding the positive in an otherwise negative experience. It is often conceptualized as a type of growth, as in post-traumatic growth or stress-related growth (Antoni, 2003; Helgeson et al., 2006; Tallman et al., 2007). The diagnosis of and treatment for breast cancer certainly are stressful life events. Yet women with breast cancer have reported benefits from their illnesses, such as changes in life priorities, improved personal relationships, enhanced spirituality, and a greater sense of purpose (Antoni, 2003).

The first study that will be reviewed demonstrates that individuals do perceive benefits from diagnosis and treatment for cancer. Tallman, Altmaier, and Garcia (2007) examined benefit finding among persons with cancer undergoing bone marrow transplant, which is an aggressive cancer treatment. The researchers sought to determine if these individuals would identify benefits from their experience.

A total of 56 individuals were interviewed via telephone over a period of three years. One year following their bone marrow transplant, 91% of participants reported at least one benefit from the experience. The most common benefits included improved life perspective, improved perception of self, improved health, and improved interpersonal relationships. Three years after the bone marrow transplant, 91% of participants reported benefits. The most common benefits at this time point were improved life perspective, improved perception of self, improved interpersonal relationships, and enhanced spirituality (Tallman et al., 2007).
Tallman, Altmaier, and Garcia (2007) also wanted to determine if finding benefit within one year of the procedure would predict depression and/or physical functioning three years later. Results indicated that finding benefit within one year of bone marrow transplant predicted better physical functioning as well as less depression three years later (Tallman et al., 2007).

Tallman, Altmaier, and Garcia conclude with a discussion of the clinical implications of their research. They suggest that benefit finding may be facilitated through a cognitive-behavioral stress management intervention, and that benefit finding may be further enhanced through open-ended discussions. Benefit finding may serve as an intentional coping strategy (Tallman et al., 2007).

The research of Tallman, Altmaier, and Garcia (2007) is included in this review for several reasons. First, it shows that a majority of individuals with cancer find benefit from their experience with the illness. In this study, 91% of participants reported at least one benefit following a bone marrow transplant. Second, this study shows that a person’s ability to find benefit from their experience with cancer can lead to less depression and to enhanced physical functioning.

Reduction in depression and improvement in physical functioning are important and desirable outcomes for individuals with all types of cancer. The present research study involved women with breast cancer; therefore, the next study, from Cordova, Cunningham, Carlson, and Andrykowski (2001), explores benefit finding among women with breast cancer.

Cordova et al. (2001) compared breast cancer survivors to women without breast cancer in terms of depression, well-being, and posttraumatic growth. They
examined relationships among depression, well-being, and posttraumatic growth and also looked for predictors of posttraumatic growth among the breast cancer survivors (Cordova et al., 2001).

This study included 70 breast cancer survivors and 70 women without breast cancer. The average age of the breast cancer survivors was 54.7 years, with a range of 27 to 87 years. On average, these women had completed medical treatment(s) 23.6 months prior to participation in this study. The majority of breast cancer survivors had had Stage I or Stage II disease (46% and 34%, respectively). The majority had received surgery, chemotherapy, and radiation (36%). The women without breast cancer were matched according to age and education level. Their average age was 54.7 years, with a range of 30 to 84 years. Participants completed all measures at one time point; there was no follow-up or repeated measurement. Quantitative measures were used to assess depression, well-being, and posttraumatic growth (Cordova et al., 2001).

The first aim of this study was to compare the two groups of women in terms of depression, well-being, and posttraumatic growth. Results revealed no statistically significant differences between the two groups in terms of depression or well-being. In other words, the two comparison groups showed similar levels of depression and well-being. However, the groups were statistically significantly different in posttraumatic growth, specifically in the areas of relating to others, spirituality, and appreciation for life, with the breast cancer survivors reporting greater posttraumatic growth (Cordova et al., 2001).
Cordova et al.’s (2001) second aim was to examine relationships among depression, well-being, and posttraumatic growth among the breast cancer survivors. They found that posttraumatic growth was not correlated with depression, stress, or well-being. Their final aim was to explore the predictors of posttraumatic growth among breast cancer survivors. The researchers found that level of perceived threat, amount of time spent talking about breast cancer, length of time since diagnosis, and income predicted posttraumatic growth. Women were likely to find benefit from their experience with breast cancer when the illness was sufficiently stressful, meeting PTSD criteria; when they spent more time talking about breast cancer; when it had been a longer time since diagnosis; and when they had a high income (Cordova et al., 2001).

The authors concluded that a stressor or trauma must be of a sufficient magnitude to elicit posttraumatic growth. In the presence of such a stressor, an individual may interpret the experience as threatening and then select coping strategies congruent with this view. Talking with others about the experience may serve to facilitate reappraisal, to help integrate the situation, to allow for emotional expression, and to encourage meaning-making. The researchers therefore call for psychosocial interventions with an emphasis on cognitive-emotional processing as well as confrontation of loss and threat related to breast cancer (Cordova et al., 2001).

The research of Cordova et al. (2001) is included in this review as it clearly demonstrates that breast cancer survivors do experience positive changes as the result of having breast cancer. It also identifies several predictors of posttraumatic growth, including time spent talking about breast cancer and length of time since diagnosis.
These factors may allow for in-depth cognitive and affective processing and, in turn, positive change (Cordova et al., 2001).

While the research of Cordova et al. shows that positive changes are possible and identifies factors that may lead to such positive changes, the research of Lechner and Antoni (2004) describes a group-based clinical intervention that facilitates positive changes in women with breast cancer. In addition, they include assessment at multiple time points.

The last study included in this section is from Lechner and Antoni (2004). This article summarizes past research involving group-based interventions aimed at facilitating benefit finding. The authors stress that clinical interventions are able to facilitate benefit finding when the intervention includes specific components. Those components include social support, emotional processing, and active coping (Lechner & Antoni, 2004).

Social support is a natural component of group-based interventions. Individuals may benefit from the support of others and from sharing their experiences with others. This may allow individuals to fully engage in cognitive processing – searching for and finding meaning in their experience. It follows, then, that group support and clinical interventions may facilitate benefit finding. Within such a group, individuals may reorganize and modify their beliefs that were challenged by the stressful event. Group members may serve as models for each other and may feel comfortable discussing thoughts and feelings (Lechner & Antoni, 2004).

One purpose of group-based interventions is to allow participants to explore and express their emotions within a supportive environment. Emotional processing
appears to be related to benefit finding, with women who report greater emotional processing also reporting greater benefit finding. However, emotional processing does not predict benefit finding. Lechner and Antoni (2004) therefore acknowledge that emotional processing is necessary for benefit finding, but that cognitive changes may be more critical.

Interventions that promote active coping or that provide coping skills training may bolster benefit finding. Lechner and Antoni (2004) have found that women who adopt a fighting spirit tend to report greater benefit finding, and that this coping strategy mediates the connection between social support and benefit finding. A fighting spirit is characterized by greater social support, less emotional distress, and a positive mental attitude. Lechner and Antoni write, “Those who enjoy good social support are more likely to find benefits and meaning in cancer because their fighting spirit coping attempts are mirrored and augmented by those friends and family that provide them with support” (Lechner & Antoni, 2004, p. 38). Therefore, an ideal clinical intervention aimed at facilitating benefit finding would include coping skills training within a supportive social environment (Lechner & Antoni, 2004).

The research of Lechner and Antoni (2004) is included in this review because it not only reinforces previous research indicating that women with breast cancer can find benefit from their illness experience, but it also outlines specific variables that contribute to benefit finding and therefore are important to include in a group-based intervention. The adoption of a fighting spirit and an increase in social support are precursors to benefit finding. For women experiencing depression, these may be
missing; women may feel helpless or hopeless and may have a reduced social support network.

**Summary**

Music-Assisted Relaxation may facilitate a decrease in depression, an improvement in affect, and the experience of benefit finding among women at the completion of treatment for breast cancer. Sedative music will complement the context and purpose of the intervention. Music has been found to enhance relaxation, to decrease stress and anxiety, and also to have a positive influence on physiological systems. Improved relaxation and decreased anxiety may lead to reductions in negative affect. While music itself is pleasurable and rewarding, the use of music with relaxation also adds a simple, everyday element of pleasure that may further increase positive affect. Increased positive affect can lead to decreased depression as well as improved cognitive processing. These factors, when paired with a discussion of stress and the added psychosocial support of the music therapist, may lead to benefit finding.

The intervention described in the next chapter was informed, in part, by the above studies and also offers something new to this growing body of research. Robb summarized music therapy interventions as falling into two primary categories: music listening or music combined with physically-based relaxation techniques (Robb, 2000). The intervention utilized in this study involved the latter. In addition, it involved a clinical population of women with breast cancer. The intervention included individual sessions held once each week for four weeks. Further,
participants were encouraged to practice the relaxation techniques at home.

Therefore, this dissertation will contribute to extant research in the fields of music therapy as well as psycho-oncology.
CHAPTER THREE

Methods

Summary of Problem and Purpose

Breast cancer can be thought of as an illness experience, an experience that is, at the very least, challenging, stressful, and difficult. There are numerous types of breast cancer and an even greater number of treatment combinations. Each treatment brings with it unique physical and emotional side effects. Even when treatments are completed and a woman is free of cancer, she still may experience physical and psychological distress. There are reminders of the disease, ranging from annual mammograms to daily medications (i.e., Tamoxifen), as well as a great deal of uncertainty and the ever-present threat of recurrence.

These psychological and physical concerns may continue for an extended period of time beyond the completion of treatment. The complex needs facing women at the end of treatment for breast cancer require adequate support and appropriate interventions (Lethborg & Kissane, 2003). Poor social support is associated with poor quality of life, as are depression, fear, and anxiety (Paskett et al., 2008). In turn, poor quality of life and psychological distress negatively impact disease outcomes (McGregor & Antoni, 2009). Enhanced psychosocial support is one factor that may positively contribute to the improved quality of life of breast cancer survivors. Research is required to determine and enhance those interventions that provide optimal psychosocial support.
The purpose of the study was to investigate the effectiveness of a Relaxation Intervention, as a form of psychosocial support, for women at the completion of treatment for breast cancer. The goals of the intervention were to decrease depression, to improve mood, or affect, and to facilitate benefit finding. The Relaxation Intervention was formatted as four individual sessions, held once each week over the course of four weeks. Each session included the discussion of a stress-related topic as well as guidance through a relaxation experience; each week, a new topic and a new relaxation technique were presented. The intervention had two conditions: Music-Assisted Relaxation (MAR) and Relaxation Alone (RA). MAR included the use of sedative, soothing music along with standard, spoken directives during the relaxation experience. RA included only standard, spoken directives. All other elements of the intervention were identical.

Participants

A total of 34 women enrolled in the study, with 14 women withdrawing for varying reasons, such as lack of childcare, loss of contact between researcher/participant, and inability to travel to research location. Of the 34 women who enrolled, complete data were collected for 20 women, with 10 women in each Intervention Condition. In other words, 20 women completed all four sessions as well as all measures. All data discussed and reported from this point forward represent those 20 women.

The average age of the sample was 48.35 years with a range of 30 to 60 years. The sample included a variety of ethnic backgrounds: 45% described themselves as
Hispanic, 30% as Caucasian, and 25% as African American or Caribbean Black. All women had breast cancer, of varying types and stages, and either had recently finished, or were soon-to-be-finishing, their treatment for breast cancer. Complete demographic information will be shared in Chapter Four.

**Inclusion criteria.** Participants were adult women who were at the completion of treatment for breast cancer at the time of enrollment. All participants were able to read and speak English. All participants had breast cancer and were within three months of completion of acute treatment for breast cancer or within one year following acute treatment completion. No restrictions were placed upon age or stage of disease to facilitate maximum recruitment. Only women were included in this study, as breast cancer is more common among women. Women from all racial/ethnic groups were provided the opportunity to participate in this study.

**Exclusion criteria.** Males were excluded from this study as breast cancer is more prevalent in females. Women who had any type of cognitive dysfunction or history of mental illness were not eligible for this study. In addition, individuals with brain metastases, cognitive impairment, and/or psychosis were not eligible for participation.

**Study Design and Variables**

**Study design.** This was a 4-week intervention study with a pretest-posttest quasi-experimental design. Participants were randomly assigned to one of two Intervention Conditions at the time of enrollment. It was also a mixed methods study, incorporating both quantitative and qualitative procedures and measures.
Variables. The dependent variables were Depression, Affect, and Benefit Finding. The independent variable was Intervention Condition, that is, MAR or RA.

Informed Consent. The methods utilized in this study were approved by two University of Miami ethics committees: the Human Subjects Research Office, a committee which reviews all studies involving human subjects; and the Protocol Review Committee, a committee which reviews all studies involving individuals with cancer. All participants who enrolled in the study provided their written informed consent. The informed consent form is included in Appendix A.

Methodological Considerations

The method utilized in this study is adapted from a body of research describing cognitive behavioral stress management interventions for women at the completion of treatment for breast cancer. Such interventions are formatted as group sessions with relaxation programs lasting 45 minutes and a total session length of two hours. The author originally planned to conduct her sessions in a similar manner and with a group format. Relaxation programs were created that lasted approximately 45 minutes. The author then pilot tested the intervention with small groups of women, seeking suggestions about the relaxation scripts as well as the musical selections.

Helpful feedback was received from the pilot testing, namely that the relaxation programs should be shortened from 45 minutes to 20 or 30 minutes. Many women stated that they simply would not have, or would not take, 45 minutes out of a busy day to practice relaxation techniques, but that they would easily be able to find 20 or 30 minutes to devote to relaxation practice. This feedback, paired with
challenges in both scheduling and recruiting of participants, led the author to change the format from group to individual sessions with relaxation programs lasting 20 to 30 minutes within an overall session length of one hour.

Quantitative Measures

Participant Information Form. Basic demographic information was gathered using the researcher-designed Participant Information Form, found in Appendix B. This form included questions about age and ethnic/cultural background. It also included questions specific to breast cancer, that is, type of breast cancer, stage of the disease, and treatments received and/or in progress.

Musical Background Questionnaire. The purpose of the Musical Background Questionnaire, included in Appendix C, was to assess amount of formal music training and/or extensive involvement with music among participants. This questionnaire included questions about involvement with music as a child and as an adult, and questions concerning listening habits and concert attendance. This questionnaire was adapted from the research of Kallinen (2005).

The Center for Epidemiologic Studies – Depression Scale (CES-D). Depression was measured using the CES-D, included in Appendix D. The CES-D includes 20 items, rated on a 4-point Likert-type scale, and measures a range of depressive symptoms. Examples of items include “I was bothered by things that don’t usually bother me” and “I had crying spells.” Participants indicate how often they felt that way during the past month. Scores may range from 0 to 60, with higher scores suggesting greater depressive symptoms and a score of 16 or higher indicating
clinically significant depressive symptoms (Schroevers, Sanderman, van Sonderen, & Ranchor, 2000; Urcuyo, Boyers, Carver, & Antoni, 2005). Reliability estimates range from .88 to .92 (Folkman, 1997; Reis & Herz, 1986; Urcuyo et al., 2005).

**The Profile of Mood States – Short Form (POMS).** The POMS-Short Form, found in Appendix E, assessed mood states along two dimensions: Positive Affect and Negative Affect. A total score, reflecting total mood disturbance or Total Distress, can also be obtained. The short form includes 14 self-descriptive adjectives, rated on a 5-point scale (Guadagnoli & Mor, 1989). Internal consistency reliability for the POMS has been reported at .90 and above. This measure has been widely used in studies involving women who have breast cancer (Heiney, McWayne, Ford, & Carter, 2006).

**The Benefit Finding Scale.** This scale measured perceived benefits stemming from the diagnosis and treatment for breast cancer. This measure is included in Appendix F. Participants are asked to indicate their level of agreement, along a 5-point scale, with 17 items. Examples of items include “Having had breast cancer has made me realize the importance of planning for my family’s future” and “Having had breast cancer has led me to deal better with stress and problems.” The domains assessed include acceptance, interpersonal growth, and stronger sense of life purpose. Scores can range from 0 to 68, with higher scores indicating greater benefit finding. The internal reliability of this scale is .95 (Antoni et al., 2001).
Qualitative Measures

The qualitative measures were intended to provide a rich source of evaluation of the intervention through use of participants’ own words. Participants’ perspectives were captured through Participant Diaries and a Semi-Structured Interview.

Participant Diaries. Participants were provided with diaries in which they recorded the frequency and amount of time spent relaxing each day as well as comments about the specific techniques, the music, and the experience, in general. Participants were also prompted to record their mood and levels of pain and fatigue. Diary recording has been used in the research of Antoni et al. (e.g., 2001). A sample page from the Participant Diary is included in Appendix G.

The Semi-Structured Interview. The purpose of the Semi-Structured Interview was to gather information regarding the experience of participating in the Relaxation Intervention. A semi-structured approach was used in which questions were planned prior to the interview. The questions explored the participants’ reactions and feelings toward the intervention (Patton, 2002; Strauss & Corbin, 1998). Questions included in the Semi-Structured Interview are found in Appendix H.

Materials

Music was played free-field using an iPod Mini (serial number 4J513NUGS41) in conjunction with an inMotion portable speaker system by Altec Lansing Technologies, Inc. (model number N12424). Portable Discmans and headphones were also made available to all participants, in case they did not have a
CD player at home. These Discmans could be borrowed for use throughout the course of the intervention and were returned upon study completion.

Procedures

Enrollment procedures and intervention location. Women were recruited from two locations, either the Sylvester Comprehensive Cancer Center (SCCC), on the University of Miami’s medical campus, or The Wellness Community, located in South Miami. The SCCC is a comprehensive cancer center and part of the Leonard M. Miller School of Medicine at the University of Miami. The SCCC is dedicated to cancer-related research, diagnosis, and treatment.

The author was present at the Radiation Oncology Unit of the SCCC on set days to talk with women before or after their regularly scheduled appointment with the radiation oncologist. The author worked closely with Dr. Christiane Takita, a radiation oncologist, as well as her nurses, who would introduce the author to potential participants. The author then described the study, distributed printed information about the study, and answered any questions that women had about the study. In addition, appointments were scheduled between the author and those women who agreed (verbally) to participate. Informed consent was obtained prior to, or at the beginning of, the first session.

The Wellness Community offers support for both patients and families in living with cancer. Support groups, educational workshops, and stress management programs are offered on a regular basis. The services are offered free of charge and serve as a complement to traditional medical care.
The author went to The Wellness Community at regular times throughout the week. She attended orientation meetings as well as regularly scheduled classes and programs. A brief synopsis of the study was given and interested women were given printed information. The author was available to answer questions and to schedule appointments. In addition, flyers were displayed in a central area and information was sent via email to appropriate women (i.e., breast cancer survivors) by the Program Director.

Sessions, then, were held at either the SCCC or at The Wellness Community in an effort to enhance the convenience and practicality for participants. At the SCCC, a private waiting room was used for the sessions. This room had a small table, a couch, and two other chairs. It was located apart from the hustle and bustle of the radiation oncology unit. At The Wellness Community, sessions were held in one of two “group” rooms, rooms that had several comfortable couches and a very home-like atmosphere.

**Intervention description.** The relaxation intervention involved four individual (1:1) sessions, held once each week for four weeks. Each session was approximately one hour in length. Women were randomly assigned to one of two Intervention Conditions: MAR or RA.

The general goal of the intervention was to increase psychosocial support to women at the completion of treatment for breast cancer. More specifically, goals were to decrease Depression and Negative Affect, to improve Positive Affect, and to facilitate Benefit Finding. Each session involved the discussion of a stress-related topic, including: awareness of stress, identification of stress and related thoughts and
feelings, and ways to dispute or change negative thought patterns. Stress-related topics were adapted from the research of Antoni et al. (e.g., 2001). The discussion was followed by guidance through a relaxation experience. A new relaxation technique was presented each week, progressing from active relaxation (for example, progressive muscle relaxation) to imagery-based relaxation. The relaxation scripts and techniques were adapted from the research of Antoni et al. (e.g., 2001). An excerpt of a relaxation script used in this study is found in Appendix I.

Each session included a time for checking in, where participants could share about their week and what was happening in their lives. Then the POMS was administered. This was followed by the presentation and discussion of the stress-related topic. Personal strengths were shared during the last session. Informal homework was assigned, typically encouraging awareness of stress and reactions to stress in daily life.

Following the discussion of the stress-related topic, participants were introduced to that session’s relaxation program and were then guided through that program by the author. Vocal scripts were spoken “live,” in real time by the author during each session. Each relaxation program was 20-30 minutes long. After the relaxation experience, participants had the opportunity to share any thoughts or feelings with the researcher. At the close of the session, the POMS was administered for the second time and a preview of the upcoming session was given. In addition, women were encouraged to practice the relaxation at home.

These elements were the same in both conditions. The only difference between conditions was the incorporation of sedative, relaxing music along with the
spoken relaxation directives in the MAR condition. The author selected contemporary acoustic music that was soothing in nature and that met the following criteria: slow, steady tempi – at or below resting heart rate; legato phrasing; regular, smooth rhythm with a lack of strong, percussive elements; gradual, predictable changes in musical elements; soft to moderate dynamics with predictable changes; simple, sustained melodies with narrow pitch ranges and stepwise progression; and consonant harmonies. Extant research has established these musical elements as characteristic of sedative, relaxing music (Mandel et al., 2007; Radocy & Boyle, 2003; Robb, Nichols, Rutan, Bishop, & Parker, 1995).

For each week, music was chosen to reflect and match the relaxation script. For example, in Week Two, music that began with a “swell” was chosen to accompany, and coincide with, the beginning of the beach imagery. The 20 to 30 minutes of music prepared for each week was of a similar style with natural and smooth transitions from one piece to another.

Table 1 shows the content of MAR, according to each week. Each type of relaxation is listed along with corresponding information about the music used in conjunction with the relaxation. In contrast, Table 2 shows the content of RA according to each week.

Participants in both conditions received a compact disc (CD) at the close of each session. The CD contained an audio recording of the exact relaxation experience used during that session. This allowed participants to practice at home, between sessions, and also served as a gift for their time and participation. Participants in the MAR condition were given a CD containing both music and spoken directives, while
participants in the RA condition were given a CD containing spoken directives only. In both cases, the spoken directives were recorded using the author’s voice.

Table 1

*Description of MAR*

<table>
<thead>
<tr>
<th>Week</th>
<th>Type of Relaxation</th>
<th>Artist/Composer</th>
<th>Instrumentation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week One</td>
<td>PMR</td>
<td>William Ackerman</td>
<td>Guitar</td>
</tr>
<tr>
<td>Week Two</td>
<td>PMR with Beach Imagery</td>
<td>Jim Brickman</td>
<td>Piano, flute, strings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Michael Hoppe</td>
<td></td>
</tr>
<tr>
<td>Week Three</td>
<td>Special Place Imagery</td>
<td>Peter Kater</td>
<td>Native American flute</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R. Carlos Nakai</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>David Arkenstone</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Michael Hoppe</td>
<td></td>
</tr>
<tr>
<td>Week Four</td>
<td>“Ball of Light” Imagery</td>
<td>Eric Tingstad</td>
<td>Piano, strings, oboe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nancy Rumbel</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>George Winston</td>
<td></td>
</tr>
</tbody>
</table>

Table 2

*Description of RA*

<table>
<thead>
<tr>
<th>Week</th>
<th>Type of Relaxation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week One</td>
<td>PMR</td>
</tr>
<tr>
<td>Week Two</td>
<td>PMR with Beach Imagery</td>
</tr>
<tr>
<td>Week Three</td>
<td>Special Place Imagery</td>
</tr>
<tr>
<td>Week Four</td>
<td>“Ball of Light” Imagery</td>
</tr>
</tbody>
</table>

Data Collection and Assessment Procedures

Data were gathered beginning in the first meeting, or session. Demographic information was gathered using the Participant Information Form and the Musical Background Questionnaire. The CES-D and the Benefit Finding Scale were then administered.
Before and after each session, the POMS was completed. In addition, participants used the Participant Diary to record the amount of time spent practicing the relaxation techniques as well as any thoughts or comments concerning the same.

After the final session, the two mood measures were administered along with the Semi-Structured Interview. The purpose of the interview was to gather information about the participants’ experience of participating in the intervention as well as their thoughts/feelings regarding its content. Table 3 displays an overview of the study calendar and organization.

<table>
<thead>
<tr>
<th>Table 3</th>
<th>Study Calendar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline</td>
</tr>
<tr>
<td>1. Depression</td>
<td>Progressive Muscle Relaxation (PMR)</td>
</tr>
<tr>
<td>2. Benefit Finding</td>
<td>Affect</td>
</tr>
<tr>
<td>3. Participant Diaries distributed</td>
<td>Pre-Session</td>
</tr>
<tr>
<td>4. Semi-Structured Interview conducted</td>
<td>Affect</td>
</tr>
</tbody>
</table>

Data Analyses

Quantitative data. The effect of Intervention Condition on change over time among each of the Dependent Variables was analyzed using a Mixed ANOVA. The between-subjects variable was Intervention Condition (Music-Assisted Relaxation and Relaxation Alone) and the within-subjects variable was Time (pretest and posttest). Underlying assumptions of ANOVA were investigated, that is,
independence of sampling, normal distribution of data, and homogeneity of variance. Post-hoc analyses were planned as indicated by the presence of an interaction effect (Keppel & Wickens, 2004). The inferential statistical significance was reported at the $p < .05$ level.

Effect size measurement was also used to determine the clinical relevance of the differences between Intervention Conditions. The benefit of reporting effect sizes is that the statistical technique is not influenced by sample size and can reveal clinically relevant and meaningful results (Gold, 2004; Gravetter & Wallnau, 2005). The effect size measurement used in this study was Cohen’s $d$.

Qualitative data. Qualitative data were gathered using Participant Diaries and a Semi-Structured Interview. An inductive approach was used in the analysis of the diaries. Diary entries were read by the author and then coded, using open coding. Strauss and Corbin (1998) define open coding as “the analytic process through which concepts are identified and their properties and dimensions are discovered in data” (p. 101). Then a comparative analysis was used to organize the open codes into categories with similar properties and dimensions (Strauss & Corbin, 1998).

A deductive approach was used in the analysis of the interviews. Notes were taken during every interview and summaries were created by the author. Select interviews were also audio recorded, determined by the availability of individual participants. These recordings were reviewed by the author with selections transcribed verbatim. Then all responses were organized according to the interview questions (Patton, 2002; Strauss & Corbin, 1998).
CHAPTER FOUR

Descriptive Statistics

The recruitment and data collection phase of this study lasted approximately eleven months, from June 2008 through April 2009. The final sample included 20 women. The results described and summarized below are for those 20 women who completed all aspects of the study, that is, all four sessions and all measures at all time points. This chapter presents descriptive results for the total sample and each Intervention Condition.

Demographics

Demographic characteristics of this sample are summarized in Table 4. The final sample included 20 participants. The mean age of the total sample was 48.35 years, with ages ranging from 30 to 60 years. A variety of ethnic and cultural groups were represented.

A total of 10 participants were assigned to MAR. The mean age was 50.5 years, with a range from 38 to 59 years. A variety of ethnic and cultural groups were represented. The majority of women in the MAR condition reported having invasive breast cancer. The most common stage of disease was Stage I; however an equal number of women did not know the exact stage of their disease. The researcher recorded the type of treatment, if any, women were receiving during the course of the study. Five women were receiving radiation, three were out of treatment, and two were receiving chemotherapy.
A total of 10 participants were assigned to RA. The mean age was 46.2 years, with a range from 30 to 60 years. This average age is younger than that of participants in the MAR condition. A variety of ethnic and cultural groups were represented. The majority of women in this condition reported having invasive breast cancer. The most common stage of disease was Stage II. The researcher recorded the type of treatment, if any, women were receiving during the course of the study. Of those women assigned to the RA condition, four were receiving radiation, five were out of treatment, and one participant had a difficult case with numerous advanced treatments.

Musical characteristics of the sample are summarized in Table 5. The majority of women in this study were involved with music in their childhoods and a small minority reported involvement with music in their adulthoods. Involvement with music as an adult includes the study of music in college as well as participant-determined classification as an amateur musician, a professional musician, a music educator, or a music therapist.

A majority of women in the MAR condition were involved with music as children. Two participants had been members of band or chorus; three had taken lessons. One participant reported involvement with music as an adult. Women were asked, “How often do you listen to music?” The majority of women in the MAR condition responded “always” with the next most common response being “seldom.” Women were also asked, “How often do you go to concerts or other musical performances?” An equal number responded “seldom” and “frequently.”
All women in the RA condition were involved with music as children. Two participants were also members of band or chorus and six had taken lessons. One participant reported involvement with music as an adult. Women were asked, “How often do you listen to music?” The majority of women in the RA condition responded “always.” Women were also asked, “How often do you go to concerts or other musical performances?” The majority responded “seldom,” with the next most common response being “frequently.”
<table>
<thead>
<tr>
<th>Demographics</th>
<th>Total Sample</th>
<th>MAR</th>
<th>RA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hispanic</td>
<td>9</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Caucasian</td>
<td>6</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>African American/Caribbean Black</td>
<td>5</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Type of Breast Cancer (as named by participant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DCIS</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Her2</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Invasive</td>
<td>-</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Microcalcification</td>
<td>-</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Most common</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Triple negative</td>
<td>-</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Unknown</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Stage of Breast Cancer (as reported by participant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>I</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>II</td>
<td>7</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>III</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>IV</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Unknown</td>
<td>5</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Type of treatment during study</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiation</td>
<td>-</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Chemotherapy</td>
<td>-</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Out of treatment</td>
<td>-</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Other</td>
<td>-</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 5

Musical Characteristics

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th>MAR n = 10</th>
<th>RA n = 10</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n= 20</td>
<td>n = 10</td>
<td>n = 10</td>
</tr>
<tr>
<td>Were you involved with music as a child?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>19</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>No</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Were you a member of band or chorus?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>No</td>
<td>16</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Did you take lessons on an instrument or voice?</td>
<td>9 (3.3 yrs)</td>
<td>3 (3.8 yrs)</td>
<td>6 (2.9 yrs)</td>
</tr>
<tr>
<td>Yes (average years)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>11</td>
<td>7</td>
<td>4</td>
</tr>
<tr>
<td>Were you/are you involved with music as an adult?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>No</td>
<td>18</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>How often do you listen to music?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rarely</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Seldom</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Frequently</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Always</td>
<td>9</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>How often do you attend concerts or musical performances?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Never</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Seldom</td>
<td>8</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Frequently</td>
<td>7</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Very often</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
Depression

Depression was measured using the CES-D. Scores may range from 0 to 60, with a score of 16 or higher indicating the presence of clinically significant depressive symptoms. Depression scores decreased from pretesting to posttesting for the entire sample. In addition, the standard deviation decreased from pretesting to posttesting, indicating greater consistency and less variability. It is interesting to note that the mean scores at both pretesting and posttesting indicate low or moderate levels of Depression. Results are summarized in Table 6.

Table 6
Mean Scores for Depression | CES-D

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th>MAR</th>
<th>RA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 20</td>
<td>n = 10</td>
<td>n = 10</td>
</tr>
<tr>
<td>Pretesting</td>
<td>Mean: 12.63</td>
<td>Mean: 11.26</td>
<td>Mean: 14.00</td>
</tr>
<tr>
<td></td>
<td>SD: 13.41</td>
<td>SD: 14.42</td>
<td>SD: 12.94</td>
</tr>
<tr>
<td>Posttesting</td>
<td>Mean: 7.90</td>
<td>Mean: 6.60</td>
<td>Mean: 9.20</td>
</tr>
<tr>
<td></td>
<td>SD: 8.40</td>
<td>SD: 5.02</td>
<td>SD: 10.96</td>
</tr>
</tbody>
</table>

An item analysis revealed that Items 5 and 11 had the highest average scores, or the greatest amount of agreement among participants. Item 5 reads, “I had trouble keeping my mind on what I was doing” and Item 11 reads, “My sleep was restless.” Participants’ responses indicated they had felt this way “some or a little of the time” or “occasionally or a moderate amount of time.” It may be, then, that mental focus and sound sleep were areas of need for this sample.

In addition, at both pretesting and posttesting, Item 2 discriminated poorly among participants. Item 2 reads, “I did not feel like eating, my appetite was poor.” Participants tended to either laugh or say “I wish my appetite was poor!” when
answering this item. Seemingly, loss of appetite was not a concern among this sample of women. Also, an interesting finding was that 3 of the 4 positively-worded items discriminated poorly (Items 4, 8, and 16). That is, women reported high agreement with these items, which is the desired response and indicative of positive mood. This finding is not surprising, given that the sample is generally low in Depression.

**MAR.** The average score on the CES-D at pretesting for participants in the MAR condition was 11.26; the average score at posttesting decreased to 6.60. In addition, the standard deviation decreased from 14.42 at pretesting to 5.02 at posttesting, showing a decrease in the variability of scores. These results are summarized in Table 6 and Figure 2.

*Figure 2.* Scores obtained using the CES-D for participants in the MAR condition.

The majority of participants in this condition reported low scores on the CES-D. At pretesting, Participants 3, 6, and 7 had scores indicating the presence of clinically significant depressive symptoms. At posttesting, nearly all scores reflect
low levels of depressive symptoms; however, one participant, Participant 6, had a moderate level of depressive symptoms at posttesting.

RA. The average score on the CES-D at pretesting for participants in the RA condition was 14.00. The average score at posttesting decreased to 9.20. In addition, the standard deviation decreased from 12.94 at pretesting to 10.96 at posttesting, indicating more consistency among this group. These results are summarized in Table 6 and Figure 3.

The majority of participants in this condition reported low scores on the CES-D. However, there were some participants with clinically significant psychological distress. For example, at pretesting, Participants 2, 5, and 10 had scores indicating the presence of clinically significant depressive symptoms while Participant 1 approached the threshold score of 16. In addition, two participants, Participants 2 and 5, had at least a moderate level of depressive symptoms at posttesting.

![Figure 3. Results obtained using the CES-D for participants in the RA condition.](image-url)
Affect

Affect was measured using the POMS, which yields a total score, reflecting Total Distress, as well as scores for two sub-scales: Positive Affect and Negative Affect. Participants are asked to indicate “how (they) feel right now” using 14 self-descriptive adjectives, rated on a 5-point scale.

Results of item analysis indicated high average scores, or a high level of agreement among participants, for Items 1 and 4. The adjective representing Item 1 is “Alert” and in Item 4 is “Carefree.” Item discrimination tended to be lowest for items on the Negative Affect sub-scale, that is, Items 2, 3, 6, 8, 11, 12, and 13.

Total Distress

The total score obtained using the POMS reflects Total Distress. Scores may range from 0 to 56, with higher scores indicating greater mood disturbance. Visual inspection of the data suggest that scores for Total Distress decreased over time for the total sample, with decreases within each session as well as over the course of the intervention. The standard deviation also decreased within each session and over the course of the intervention, indicating greater consistency over time. Findings are summarized in Table 7.

MAR. Total Distress decreased within each session for participants receiving MAR. It also appears that Total Distress decreased over the course of the intervention. The standard deviation decreased within each session and also over time, suggesting greater consistency of scores. Results for Total Distress are displayed in Table 7 and Figure 4.
RA. Participants in the RA condition showed variability in Total Distress; average scores decreased within the first two sessions, increased in the third session, and decreased slightly within the final session. Results for standard deviation also reflect this variability. Results are summarized in Table 7 and Figure 5.
Table 7

*Mean Scores for Total Distress | POMS*

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td><strong>Total Sample</strong></td>
<td>n = 20</td>
<td></td>
<td>n = 10</td>
<td></td>
</tr>
<tr>
<td><strong>Week One</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>10.17</td>
<td>6.66</td>
<td>10.60</td>
<td>7.96</td>
</tr>
<tr>
<td>Post</td>
<td>7.61</td>
<td>6.00</td>
<td>8.73</td>
<td>7.74</td>
</tr>
<tr>
<td><strong>Week Two</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>9.90</td>
<td>7.95</td>
<td>11.10</td>
<td>9.05</td>
</tr>
<tr>
<td>Post</td>
<td>6.75</td>
<td>5.26</td>
<td>6.60</td>
<td>5.62</td>
</tr>
<tr>
<td><strong>Week Three</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>7.50</td>
<td>5.69</td>
<td>8.70</td>
<td>6.96</td>
</tr>
<tr>
<td>Post</td>
<td>6.80</td>
<td>5.44</td>
<td>6.30</td>
<td>4.88</td>
</tr>
<tr>
<td><strong>Week Four</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>8.95</td>
<td>8.68</td>
<td>9.10</td>
<td>6.87</td>
</tr>
<tr>
<td>Post</td>
<td>7.57</td>
<td>5.79</td>
<td>6.50</td>
<td>5.19</td>
</tr>
</tbody>
</table>
Figure 4. Average total scores (i.e., Total Distress) obtained using the POMS for participants in the MAR condition.

Figure 5. Average total scores (i.e., Total Distress) obtained using the POMS for participants in the RA condition.
Positive Affect

The possible range of scores for Positive Affect may fall between 0 – 28, with higher scores indicating greater positive mood. Data were reverse scored such that higher scores indicate greater Positive Affect. Trends in the data suggest that Positive Affect improved within each session and also improved over time. Results for standard deviation were inconsistent, indicating variability in scores. Findings are summarized in Table 8.

**MAR.** Positive Affect increased within each session for participants receiving MAR. Furthermore, it appears that Positive Affect increased over time, that is, from the first session to the final session. The standard deviation decreased from pretesting to posttesting within each session, indicating greater consistency of scores at posttesting. Results for Positive Affect are shown in Table 8 and Figure 6.

**RA.** Participants receiving RA showed variability in self-reported Positive Affect. Scores increased within each session for the first two weeks and then decreased within each session during the final two weeks. The standard deviation also reflects this variability. Results are summarized in Table 8 and Figure 7.
Table 8

Mean Scores for Positive Affect | POMS

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 20</td>
<td>n = 10</td>
<td>n = 10</td>
<td>n = 10</td>
<td>n = 10</td>
<td>n = 10</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Week One</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>20.12</td>
<td>5.35</td>
<td>18.50</td>
<td>6.42</td>
<td>21.74</td>
<td>3.68</td>
</tr>
<tr>
<td>Post</td>
<td>21.16</td>
<td>5.46</td>
<td>19.93</td>
<td>7.29</td>
<td>22.40</td>
<td>2.50</td>
</tr>
<tr>
<td>Week Two</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>19.75</td>
<td>6.22</td>
<td>18.40</td>
<td>7.41</td>
<td>21.10</td>
<td>4.77</td>
</tr>
<tr>
<td>Post</td>
<td>21.85</td>
<td>4.74</td>
<td>21.60</td>
<td>5.44</td>
<td>22.10</td>
<td>4.20</td>
</tr>
<tr>
<td>Week Three</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>21.45</td>
<td>5.46</td>
<td>20.40</td>
<td>6.48</td>
<td>22.50</td>
<td>4.30</td>
</tr>
<tr>
<td>Post</td>
<td>21.65</td>
<td>5.70</td>
<td>22.50</td>
<td>5.21</td>
<td>20.80</td>
<td>6.30</td>
</tr>
<tr>
<td>Week Four</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>20.55</td>
<td>5.82</td>
<td>19.10</td>
<td>6.71</td>
<td>22.00</td>
<td>4.67</td>
</tr>
<tr>
<td>Post</td>
<td>21.27</td>
<td>4.69</td>
<td>21.50</td>
<td>5.19</td>
<td>21.04</td>
<td>4.40</td>
</tr>
</tbody>
</table>
Figure 6. Average scores obtained using the Positive Affect sub-scale of the POMS for participants in the MAR condition.

Figure 7. Average scores obtained using the Positive Affect sub-scale of the POMS for participants in the RA condition.
Negative Affect

The possible range of scores for Negative Affect may fall between 0 – 28, with higher scores indicating greater negative mood. Here, lower scores are desirable. Trends in the data suggest that Negative Affect decreased within each session and also decreased over time. The standard deviation decreased from pretest to posttest within each session, indicating more consistent responses among the sample at posttest. Findings are summarized in Table 9.

**MAR.** Negative Affect decreased within each session for participants receiving MAR and, overall, participants rated themselves as very low in Negative Affect. Scores for Negative Affect appear to decrease over time. Standard deviation decreased within each session and also over time. This is expected, given the generally low scores for Negative Affect. Results for Negative Affect are shown in Table 9 and Figure 8.

**RA.** Negative Affect decreased within each session and also appears to show a decrease over time for participants receiving RA. In addition, the standard deviation decreased within each session yet was quite high during Week Four, perhaps due to the high Negative Affect of one participant. Results are summarized in Table 9 and Figure 9.
Table 9

_Mean Scores for Negative Affect | POMS_

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th></th>
<th>MAR</th>
<th></th>
<th>RA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n = 20</td>
<td>n = 10</td>
<td>n = 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Week One</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>2.25</td>
<td>3.31</td>
<td>1.10</td>
<td>1.97</td>
<td>3.40</td>
<td>4.03</td>
</tr>
<tr>
<td>Post</td>
<td>0.65</td>
<td>1.66</td>
<td>0.40</td>
<td>0.84</td>
<td>0.90</td>
<td>2.23</td>
</tr>
<tr>
<td>Week Two</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>1.65</td>
<td>2.89</td>
<td>1.50</td>
<td>2.22</td>
<td>1.80</td>
<td>3.55</td>
</tr>
<tr>
<td>Post</td>
<td>0.60</td>
<td>1.54</td>
<td>0.20</td>
<td>0.42</td>
<td>1.00</td>
<td>2.11</td>
</tr>
<tr>
<td>Week Three</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>0.95</td>
<td>2.65</td>
<td>1.10</td>
<td>3.14</td>
<td>0.80</td>
<td>2.20</td>
</tr>
<tr>
<td>Post</td>
<td>0.45</td>
<td>1.79</td>
<td>0.80</td>
<td>2.53</td>
<td>0.10</td>
<td>0.32</td>
</tr>
<tr>
<td>Week Four</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre</td>
<td>1.50</td>
<td>5.33</td>
<td>0.20</td>
<td>0.42</td>
<td>2.80</td>
<td>7.48</td>
</tr>
<tr>
<td>Post</td>
<td>0.80</td>
<td>3.58</td>
<td>0.00</td>
<td>0.00</td>
<td>1.60</td>
<td>5.06</td>
</tr>
</tbody>
</table>
**Figure 8.** Average scores obtained using the Negative Affect sub-scale of the POMS for participants in the MAR condition.

**Figure 9.** Average scores obtained using the Negative Affect sub-scale of the POMS for participants in the RA condition.
**Benefit Finding**

Benefit Finding was measured using the Benefit Finding Scale. Scores may range from 0 to 68, with higher scores indicating greater benefit finding. Benefit Finding increased only slightly from pretesting to posttesting. Descriptive results for Benefit Finding are summarized in Table 10.

Results of the item analysis were quite different at pretesting and posttesting. At pretesting, participants showed a high level of agreement with Item 16 (i.e., “Having had breast cancer … has helped me become more focused on priorities, with a deeper sense of purpose in life”) and Item 17 (i.e., “… has helped me become a stronger person, more able to cope effectively with future life challenges”). At posttesting, participants showed high levels of agreement on numerous items (Items 2, 3, 14, 15, and 17).

Participants showed very low agreement with the following items at pretesting: Item 5 (i.e., “… has made me more sensitive to family issues”), Item 11 (i.e., “… has led me to deal better with stress and problems”), and Item 12 (i.e., “… has led me to meet people who have become some of my best friends”). At posttesting, participants showed low agreement with several items (Items 9, 10, 11, and 12).

At pretesting, item discrimination was poor for Item 1 (i.e., “… has led me to be more accepting of things”) and Item 17 (i.e., “… has helped me become a stronger person, more able to cope effectively with future life challenges”). However, at posttesting, item discrimination was good for all items.
Table 10
*Mean Scores for Benefit Finding | The Benefit Finding Scale*

<table>
<thead>
<tr>
<th></th>
<th>Total Sample</th>
<th></th>
<th>MAR</th>
<th>n = 10</th>
<th></th>
<th>RA</th>
<th>n = 10</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td>Pretesting</td>
<td>45.50</td>
<td>12.41</td>
<td>45.60</td>
<td>10.24</td>
<td>45.40</td>
<td>14.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Posttesting</td>
<td>48.60</td>
<td>13.97</td>
<td>46.00</td>
<td>12.63</td>
<td>51.20</td>
<td>15.41</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**MAR.** The average score on the Benefit Finding Scale at pretesting for participants in the MAR condition was 45.60. This average increased only slightly to 46.00 at posttesting. Standard deviation increased from pretesting to posttesting, indicating greater variability in scores at posttesting. These results are summarized in Table 10 and Figure 10. Generally, the figure shows that scores increase from pretest to posttest, which is the desired direction of change. However, for Participants 6, 8, and 10, the scores for Benefit Finding actually decreased from pretesting to posttesting.

**RA.** The average score on the Benefit Finding Scale at pretesting for participants in the RA condition was 45.40. The average score was 51.20 at posttesting. Standard deviation increased slightly from pretesting to posttesting, indicating more variability in scores. Results are summarized in Table 10 and Figure 11. The figure shows that scores generally increase from pretesting to posttesting, although two participants, Participants 7 and 9, reported a decrease in Benefit Finding from pretesting to posttesting.
Figure 10. Scores obtained using The Benefit Finding Scale for participants in the MAR condition.

Figure 11. Scores obtained using The Benefit Finding Scale for participants in the RA condition.
Reliability Estimates

Cronbach’s Alpha was used as a measure of test reliability. For the CES-D, test reliability was 0.95 at pretesting and 0.90 at posttesting. These values are within the range reported from other studies, that is, from 0.88 to 0.92 (Folkman, 1997; Reis & Herz, 1986; Urcuyo et al., 2005). For the POMS, test reliability was 0.95 at pretesting and 0.94 at posttesting. These values are in keeping with the reliability reported in other studies, that is, 0.90 and above (Heiney et al., 2006).

Finally, for The Benefit Finding Scale, test reliability was 0.88 at pretesting and 0.94 at posttesting. These values are less than the internal reliability reported by Antoni et al. (2001) (i.e., 0.95). Table 11 summarizes these results.

Table 11

<table>
<thead>
<tr>
<th>Test</th>
<th>CES-D</th>
<th>POMS</th>
<th>Benefit Finding Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pretesting</td>
<td>0.95</td>
<td>0.95</td>
<td>0.88</td>
</tr>
<tr>
<td>Posttesting</td>
<td>0.90</td>
<td>0.94</td>
<td>0.94</td>
</tr>
</tbody>
</table>
CHAPTER FIVE
Inferential Statistics

The effect of Intervention Condition on change over time among each of the Dependent Variables was analyzed using a Mixed ANOVA. The between-subjects variable was Intervention Condition (MAR or RA) and the within-subjects variable was Time (pretest and posttest). Underlying assumptions of ANOVA were investigated and are described below. The inferential statistical significance was reported at the $p < .05$ level.

Assumptions of ANOVA were investigated for each Dependent Variable. The first assumption, independence of observations, was met as participants were randomly assigned to conditions. In addition, attrition rates were nearly identical for the two conditions. The second assumption, homogeneity of variance, was also met. Standard deviations of both conditions were compared at baseline and appear similar and, further, the sample size was the same for both conditions. The third assumption, normality of observations, was assessed through review of histograms. Given the small sample size, the histograms appeared normal.

Effect sizes were calculated, using Cohen’s $d$, to determine the effectiveness of each Intervention Condition upon each of the Dependent Variables. Cohen’s $d$ offers a standardized measure of effect size and is calculated using the mean change in scores divided by the average standard deviation. As a result, the obtained value is not influenced by sample size (Gold, 2004; Gravetter & Wallnau, 2005). Cohen’s $d$ was interpreted with use of established guidelines, described in Table 12 (Gravetter & Wallnau, 2005, p. 200).
Table 12

*Interpretation of Cohen’s d*

<table>
<thead>
<tr>
<th>Magnitude of $d$</th>
<th>Evaluation of effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>$0 &lt; d &lt; 0.2$</td>
<td>Small effect Mean difference less than 0.2 standard deviation</td>
</tr>
<tr>
<td>$0.2 &lt; d &lt; 0.8$</td>
<td>Medium effect Mean difference around 0.5 standard deviation</td>
</tr>
<tr>
<td>$d &gt; 0.8$</td>
<td>Large effect Mean difference greater than 0.8 standard deviation</td>
</tr>
</tbody>
</table>

**Depression**

**Research Question #1**

Does Depression change as a function of Intervention Condition from baseline to post-intervention assessment?

**Hypothesis**

It is predicted that participants randomly assigned to MAR will show statistically significantly greater reductions in Depression than participants randomly assigned to RA.

**Analysis and Results**

Results of the Mixed ANOVA revealed a nonsignificant Time x Intervention Condition interaction, indicating that the change in mean scores over time was not statistically significantly different between the two Intervention Conditions. The ANOVA summary table is found in Table 13.
Table 13

Mixed ANOVA Summary Table | Depression

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td>62.50</td>
<td>1</td>
<td>62.50</td>
<td>.280</td>
<td>.603</td>
</tr>
<tr>
<td>Error</td>
<td>4013.60</td>
<td>18</td>
<td>222.978</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time</td>
<td>270.40</td>
<td>1</td>
<td>270.40</td>
<td>8.056</td>
<td>.011</td>
</tr>
<tr>
<td>Time x Condition</td>
<td>0.40</td>
<td>1</td>
<td>0.40</td>
<td>.012</td>
<td>.914</td>
</tr>
<tr>
<td>Error</td>
<td>604.20</td>
<td>18</td>
<td>33.567</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cohen’s $d$ was calculated to determine the effectiveness of the relaxation intervention in reducing Depression for each Intervention Condition. The effect size was moderate for both conditions (MAR, $d = 0.512$; RA, $d = 0.459$). Figure 12 displays these results.

![Effect Size | Depression](image.png)

*Figure 12. Comparison of the effect sizes for each Intervention Condition on Depression.*
Conclusion

Depression did not change as a function of Intervention Condition from baseline to post-intervention assessment. Yet all participants showed a statistically significant reduction in Depression from baseline to post-intervention assessment, $F(1, 18) = 8.056, p = .011$. In addition, both forms of the intervention had a moderate effect on Depression, based on values for Cohen’s $d$.

Affect

Research Question #2

Does Affect change as a function of Intervention Condition from baseline to post-intervention assessment?

Hypotheses

It is predicted that participants randomly assigned to MAR will show statistically significantly greater reductions in Total Distress than participants randomly assigned to RA. It is further predicted that participants randomly assigned to MAR will show statistically significantly greater improvements in Positive Affect, and statistically significantly greater reductions in Negative Affect, than participants randomly assigned to RA.

Analyses and Results

Total distress. Results of the Mixed ANOVAs indicated a nonsignificant interaction effect for each of the four weeks, suggesting that the change in mean
scores within each session was not statistically significantly different between the two Intervention Conditions. The interaction effect approached significance during Week Three, $F(1, 18) = 3.848, p = .065$, during which participants in the MAR condition reported a decrease of 2.4 points in Total Distress while participant in the RA condition reported an increase of 1.0 point. Table 14 summarizes these results.

Cohen’s $d$ was calculated to investigate the effectiveness of each Intervention Condition upon Total Distress within each week. Cohen’s $d$ was also calculated to determine the effectiveness of each Intervention Condition upon Total Distress over time by summing the changes in $d$ across the four weeks. Results indicated that, over the course of the intervention, MAR had a small, and positive, influence on Total Distress ($d = 0.193$) while RA had a medium, and negative, influence on Depression ($d = -0.692$). Table 15 and Figures 13 and 14 summarize the results concerning effect size.
Table 14

*Mixed ANOVA Summary Tables | Total Distress*

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week One</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>23.808</td>
<td>1</td>
<td>23.808</td>
<td>.347</td>
<td>.563</td>
</tr>
<tr>
<td>Error</td>
<td>1236.14</td>
<td>18</td>
<td>68.674</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 1</td>
<td>65.382</td>
<td>1</td>
<td>65.382</td>
<td>4.459</td>
<td>.049</td>
</tr>
<tr>
<td>Wk 1 x Condition</td>
<td>4.706</td>
<td>1</td>
<td>4.706</td>
<td>.321</td>
<td>.578</td>
</tr>
<tr>
<td>Error</td>
<td>263.956</td>
<td>18</td>
<td>14.664</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Week Two</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>11.025</td>
<td>1</td>
<td>11.025</td>
<td>.128</td>
<td>.725</td>
</tr>
<tr>
<td>Error</td>
<td>1555.25</td>
<td>18</td>
<td>86.403</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 2 x Condition</td>
<td>18.225</td>
<td>1</td>
<td>18.225</td>
<td>2.293</td>
<td>.147</td>
</tr>
<tr>
<td>Error</td>
<td>143.050</td>
<td>18</td>
<td>7.947</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Week Three</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>3.60</td>
<td>1</td>
<td>3.60</td>
<td>.064</td>
<td>.803</td>
</tr>
<tr>
<td>Error</td>
<td>1007.80</td>
<td>18</td>
<td>55.989</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 3</td>
<td>4.900</td>
<td>1</td>
<td>4.900</td>
<td>.652</td>
<td>.430</td>
</tr>
<tr>
<td>Wk 3 x Condition</td>
<td>28.900</td>
<td>1</td>
<td>28.900</td>
<td>3.848</td>
<td>.065</td>
</tr>
<tr>
<td>Error</td>
<td>135.200</td>
<td>18</td>
<td>7.511</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Week Four</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>8.492</td>
<td>1</td>
<td>8.492</td>
<td>.084</td>
<td>.775</td>
</tr>
<tr>
<td>Error</td>
<td>1819.73</td>
<td>18</td>
<td>101.096</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 4</td>
<td>19.003</td>
<td>1</td>
<td>19.003</td>
<td>1.510</td>
<td>.235</td>
</tr>
<tr>
<td>Wk 4 x Condition</td>
<td>14.921</td>
<td>1</td>
<td>14.921</td>
<td>1.186</td>
<td>.291</td>
</tr>
<tr>
<td>Error</td>
<td>226.459</td>
<td>18</td>
<td>12.581</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 15

*Effect Size | Total Distress*

<table>
<thead>
<tr>
<th></th>
<th>MAR</th>
<th>RA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week One</strong></td>
<td>0.238</td>
<td>0.710</td>
</tr>
<tr>
<td><strong>Week Two</strong></td>
<td>0.613</td>
<td>0.297</td>
</tr>
<tr>
<td><strong>Week Three</strong></td>
<td>0.405</td>
<td>-0.194</td>
</tr>
<tr>
<td><strong>Week Four</strong></td>
<td>0.431</td>
<td>0.018</td>
</tr>
<tr>
<td><strong>Sum of Differences</strong></td>
<td>0.193</td>
<td>-0.690</td>
</tr>
</tbody>
</table>
Figure 13. Comparison of the effect sizes for each Intervention Condition on Total Distress.

Figure 14. Comparison of the summed effect sizes for each Intervention Condition on Total Distress.
**Positive affect.** Results of the Mixed ANOVAs indicated a statistically significant interaction effect for Week Three x Intervention Condition, $F(1, 18) = 6.734, p = .018$. The MAR condition reported an average increase of 2.1 points while the RA condition reported an average decrease of 1.7 points. All other weeks yielded a nonsignificant interaction effect, although in Week Four the interaction approached significance, $F(1, 18) = 3.511, p = .077$. During this week, the MAR condition reported an average increase of 2.4 points while the RA condition reported an average decrease of 0.96 points. Results are summarized in Table 16.

Cohen’s $d$ was calculated to investigate the effectiveness of each Intervention Condition upon Positive Affect within each week. Cohen’s $d$ was also calculated to determine the effectiveness of each Intervention Condition upon Positive Affect over time by summing the changes in $d$ across the four weeks. Results indicated that, over the course of the intervention, MAR had a small, and positive, influence on Positive Affect ($d = 0.195$) while RA had a medium, and negative, influence on Positive Affect ($d = -0.424$). Table 17 and Figures 15 and 16 summarize the results concerning effect size.
Table 16

*Mixed ANOVA Summary Tables | Positive Affect*

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week One</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>81.624</td>
<td>1</td>
<td>81.624</td>
<td>1.788</td>
<td>.198</td>
</tr>
<tr>
<td>Error</td>
<td>821.712</td>
<td>18</td>
<td>45.651</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 1</td>
<td>10.878</td>
<td>1</td>
<td>10.878</td>
<td>.953</td>
<td>.342</td>
</tr>
<tr>
<td>Wk 1 x Condition</td>
<td>1.490</td>
<td>1</td>
<td>1.490</td>
<td>.130</td>
<td>.722</td>
</tr>
<tr>
<td>Error</td>
<td>205.566</td>
<td>18</td>
<td>11.420</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Week Two</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>25.60</td>
<td>1</td>
<td>25.60</td>
<td>.447</td>
<td>.512</td>
</tr>
<tr>
<td>Error</td>
<td>1031.80</td>
<td>18</td>
<td>57.322</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 2</td>
<td>44.10</td>
<td>1</td>
<td>44.10</td>
<td>8.554</td>
<td>.009</td>
</tr>
<tr>
<td>Wk 2 x Condition</td>
<td>12.10</td>
<td>1</td>
<td>12.10</td>
<td>2.347</td>
<td>.143</td>
</tr>
<tr>
<td>Error</td>
<td>92.80</td>
<td>18</td>
<td>5.156</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Week Three</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>.400</td>
<td>1</td>
<td>.400</td>
<td>.007</td>
<td>.935</td>
</tr>
<tr>
<td>Error</td>
<td>1050.50</td>
<td>18</td>
<td>58.361</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 3</td>
<td>.40</td>
<td>1</td>
<td>.40</td>
<td>.075</td>
<td>.788</td>
</tr>
<tr>
<td>Wk 3 x Condition</td>
<td>36.10</td>
<td>1</td>
<td>36.10</td>
<td>6.734</td>
<td>.018</td>
</tr>
<tr>
<td>Error</td>
<td>96.50</td>
<td>18</td>
<td>5.361</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Week Four</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>14.921</td>
<td>1</td>
<td>14.921</td>
<td>.308</td>
<td>.586</td>
</tr>
<tr>
<td>Error</td>
<td>873.143</td>
<td>18</td>
<td>48.508</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 4</td>
<td>5.206</td>
<td>1</td>
<td>5.206</td>
<td>.649</td>
<td>.431</td>
</tr>
<tr>
<td>Wk 4 x Condition</td>
<td>28.174</td>
<td>1</td>
<td>28.174</td>
<td>3.511</td>
<td>.077</td>
</tr>
<tr>
<td>Error</td>
<td>144.423</td>
<td>18</td>
<td>8.024</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 17

*Effect Size | Positive Affect*

<table>
<thead>
<tr>
<th></th>
<th>MAR</th>
<th>RA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week One</strong></td>
<td>0.208</td>
<td>0.213</td>
</tr>
<tr>
<td><strong>Week Two</strong></td>
<td>0.498</td>
<td>0.223</td>
</tr>
<tr>
<td><strong>Week Three</strong></td>
<td>0.359</td>
<td>-0.321</td>
</tr>
<tr>
<td><strong>Week Four</strong></td>
<td>0.403</td>
<td>-0.211</td>
</tr>
<tr>
<td><strong>Sum of Differences</strong></td>
<td>0.195</td>
<td>-0.424</td>
</tr>
</tbody>
</table>
Figure 15. Comparison of the effect sizes for each Intervention Condition on Positive Affect.

Figure 16. Comparison of the summed effect sizes for each Intervention Condition on Positive Affect.
**Negative affect.** Results of the Mixed ANOVAs indicated a nonsignificant interaction effect for each of the four weeks, suggesting that the change in mean scores within each session was not statistically significantly different between the two Intervention Conditions. Table 18 summarizes these results.

Cohen’s $d$ was calculated to investigate the effectiveness of each Intervention Condition upon Negative Affect within each week. Cohen’s $d$ was also calculated to determine the effectiveness of each Intervention Condition upon Negative Affect over time by summing the changes in $d$ across the four weeks. Results indicated that, over the course of the intervention, MAR had a medium, and positive, influence on Negative Affect ($d = 0.450$) while RA had a medium, and negative, influence on Negative Affect ($d = -0.607$). Table 19 and Figures 17 and 18 summarize the results concerning effect size.
### Table 18

**Mixed ANOVA Summary Tables | Negative Affect**

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week One</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>19.60</td>
<td>1</td>
<td>19.60</td>
<td>2.134</td>
<td>.161</td>
</tr>
<tr>
<td>Error</td>
<td>165.30</td>
<td>18</td>
<td>9.183</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 1</td>
<td>25.60</td>
<td>1</td>
<td>25.60</td>
<td>6.847</td>
<td>.017</td>
</tr>
<tr>
<td>Wk 1 x Condition</td>
<td>8.10</td>
<td>1</td>
<td>8.10</td>
<td>2.166</td>
<td>.158</td>
</tr>
<tr>
<td>Error</td>
<td>67.30</td>
<td>18</td>
<td>3.739</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Week Two</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>3.025</td>
<td>1</td>
<td>3.025</td>
<td>.313</td>
<td>.583</td>
</tr>
<tr>
<td>Error</td>
<td>173.85</td>
<td>18</td>
<td>9.658</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 2</td>
<td>11.025</td>
<td>1</td>
<td>11.025</td>
<td>7.677</td>
<td>.013</td>
</tr>
<tr>
<td>Wk 2 x Condition</td>
<td>.625</td>
<td>1</td>
<td>.625</td>
<td>.435</td>
<td>.518</td>
</tr>
<tr>
<td>Error</td>
<td>25.850</td>
<td>18</td>
<td>1.436</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Week Three</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>2.50</td>
<td>1</td>
<td>2.50</td>
<td>.270</td>
<td>.610</td>
</tr>
<tr>
<td>Error</td>
<td>166.90</td>
<td>18</td>
<td>9.272</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 3</td>
<td>2.50</td>
<td>1</td>
<td>2.50</td>
<td>1.867</td>
<td>.189</td>
</tr>
<tr>
<td>Wk 3 x Condition</td>
<td>.40</td>
<td>1</td>
<td>.40</td>
<td>.299</td>
<td>.591</td>
</tr>
<tr>
<td>Error</td>
<td>24.10</td>
<td>18</td>
<td>1.339</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Week Four</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>44.10</td>
<td>1</td>
<td>44.10</td>
<td>1.123</td>
<td>.303</td>
</tr>
<tr>
<td>Error</td>
<td>707.00</td>
<td>18</td>
<td>39.278</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wk 4</td>
<td>4.90</td>
<td>1</td>
<td>4.90</td>
<td>3.084</td>
<td>.096</td>
</tr>
<tr>
<td>Wk 4 x Condition</td>
<td>2.50</td>
<td>1</td>
<td>2.50</td>
<td>1.573</td>
<td>.226</td>
</tr>
<tr>
<td>Error</td>
<td>28.60</td>
<td>18</td>
<td>1.589</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Table 19

**Effect Size | Negative Affect**

<table>
<thead>
<tr>
<th></th>
<th>MAR</th>
<th>RA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week One</strong></td>
<td>0.498</td>
<td>0.798</td>
</tr>
<tr>
<td><strong>Week Two</strong></td>
<td>0.983</td>
<td>0.283</td>
</tr>
<tr>
<td><strong>Week Three</strong></td>
<td>0.106</td>
<td>0.556</td>
</tr>
<tr>
<td><strong>Week Four</strong></td>
<td>0.948</td>
<td>0.191</td>
</tr>
<tr>
<td><strong>Sum of Differences</strong></td>
<td>0.450</td>
<td>- 0.607</td>
</tr>
</tbody>
</table>
Figure 17. Comparison of the effect sizes for each Intervention Condition on Negative Affect.

Figure 18. Comparison of the summed effect sizes for each Intervention Condition on Negative Affect.
Conclusions

Total Distress did not change as a function of Intervention Condition within each session; however, the difference between conditions approached statistical significance in Week Three. Results for effect sizes suggested that, overall, MAR had a small, and positive, impact on Total Distress while RA had a moderate, and negative impact on Total Distress.

Positive Affect changed as a function of Intervention Condition within each session, with participants in the MAR condition reporting statistically significantly greater improvements in Positive Affect during Week Three. The difference between conditions approached statistical significance in Week Four. Results for effect sizes supported these findings. Overall, MAR had a small, and positive, influence on Positive Affect while RA had a moderate, and negative, influence on Positive Affect.

Negative Affect did not change as a function of Intervention Condition within each session. Results for effect sizes indicated that, overall, MAR had a small, and positive, influence on Negative Affect while RA had a moderate, and negative, influence on Negative Affect.

Benefit Finding

Research Question #3

Does Benefit Finding change as a function of Intervention Condition from baseline to post-intervention assessment?
**Hypothesis**

It is predicted that participants randomly assigned to MAR will show statistically significantly greater improvements in Benefit Finding than participants randomly assigned to RA.

**Analysis and Results**

Results of the Mixed ANOVA revealed a nonsignificant Time x Intervention Condition interaction, indicating that the change in mean scores over time was not statistically significantly different between the two Intervention Conditions. The ANOVA summary table is found in Table 20.

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Condition</strong></td>
<td>44.10</td>
<td>1</td>
<td>44.10</td>
<td>.139</td>
<td>.714</td>
</tr>
<tr>
<td><strong>Error</strong></td>
<td>5707.8</td>
<td>18</td>
<td>317.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Time</strong></td>
<td>78.4</td>
<td>1</td>
<td>78.4</td>
<td>.964</td>
<td>.339</td>
</tr>
<tr>
<td><strong>Time x Condition</strong></td>
<td>25.6</td>
<td>1</td>
<td>25.6</td>
<td>.315</td>
<td>.582</td>
</tr>
<tr>
<td><strong>Error</strong></td>
<td>1464.0</td>
<td>18</td>
<td>81.33</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cohen’s $d$ was calculated to determine the effectiveness of the relaxation intervention in improving Benefit Finding for each Intervention Condition. The effect size was small for both conditions (MAR, $d = 0.105$; RA, $d = 0.270$). Figure 19 displays these results.
Figure 19. Comparison of the effect sizes for each Intervention Condition on Benefit Finding.

**Conclusion**

Benefit Finding did not change as a function of Intervention Condition from baseline to post-intervention assessment. Both forms of the intervention had a small influence on Benefit Finding, based on values for Cohen’s $d$.

**Review of Results**

**Depression**

Depression did not statistically significantly change as a function of Intervention Condition from baseline to post-intervention assessment. However, all participants showed a statistically significant reduction in Depression from baseline to post-intervention assessment and both forms of the intervention had a moderate effect on Depression, based on values for Cohen’s $d$. 
Affect

Total Distress did not change as a function of Intervention Condition within each session; however, the difference between conditions approached statistical significance in Week Three. Results for effect sizes suggested that, overall, MAR had a small, and positive, influence on Total Distress while RA had a moderate, and negative, influence on Total Distress.

Positive Affect changed as a function of Intervention Condition within each session, with statistically significantly greater improvements found for participants in the MAR condition in Week Three. The difference between conditions approached statistical significance in Week Four. Results for effect sizes suggested that, overall, MAR had a small, and positive, influence on Positive Affect while RA had a moderate, and negative, influence on Positive Affect.

Negative Affect did not change as a function of Intervention Condition within each session. Results for effect sizes suggested that, overall, MAR had a moderate, and positive, influence on Negative Affect while RA had a moderate, and negative, influence on Negative Affect.

Benefit Finding

Benefit Finding did not statistically significantly change as a function of Intervention Condition from baseline to post-intervention assessment. Both forms of the intervention had a small effect on Benefit Finding, based on values for Cohen’s $d$. 
This study involved a mixed method design, with the collection of quantitative as well as qualitative data. Qualitative data were examined using content analysis, which will be described in detail in this chapter. An etic, or outsider, perspective was held throughout the course of this research as the author does not currently have, and has never had, breast cancer (Patton, 2002). Peer debriefing was achieved through weekly meetings with the author’s dissertation advisor as well as consultation with a colleague who was conducting a qualitative research study (Lincoln & Guba, 1986).

Two forms of triangulation were used: data triangulation, via the collection of both quantitative and qualitative data; and methodological triangulation, via the use of Participant Diaries and the Semi-Structured Interview (Patton, 2002). Member checking is a form of external validity achieved via feedback from participants. Member checking was limited due to the design of the research; follow-up with participants was not a part of the research design and confirmation of participant’s statements and ideas occurred only within an individual session as necessary (Lincoln & Guba, 1986).

“Audit trail” is a term which includes the data and documentation utilized in qualitative methods and is indicative of the thoroughness and accuracy of the data as well as interpretations (Patton, 2002). In the current study, the audit trail included notes from individual sessions, participants’ actual diaries, interview summaries, interview transcriptions, notes from meetings with the author’s dissertation advisor,
notes summarizing coding efforts, notes detailing interpretations and thematic analysis, and drafts of this chapter.

**Participant Diaries**

The Participant Diaries provided a method for gathering information about participants’ thoughts, feelings, and responses to the Relaxation Intervention. Each page of the diary contained a place to record the date as well as the time spent practicing relaxation. This was followed by a broad prompt for writing: “Please comment on the relaxation experience. You might include your mood or any pain and fatigue you are feeling. Or, you might write about the music or any images you had while relaxing.”

Of the 20 participants, a total of six returned their diaries (four from the MAR condition, two from the RA condition). Given that the amount of home practice varied among participants, this relatively low response rate is not surprising. Some women used the diaries only a handful of times while others used the diaries quite regularly. The amount of writing also varied, with some women jotting down brief notes and others writing lengthy, detailed entries.

The diaries were read by the author and entries were coded, initially using open codes. Strauss and Corbin (1998) define open coding as “the analytic process through which concepts are identified and their properties and dimensions are discovered in data” (p. 101). Then a comparative analysis was used to organize the open codes into categories with similar properties and dimensions (Strauss & Corbin, 1998). These categories, or themes, are described below (please note that quotations
reflect participants’ exact words, that comments from the author are made within
brackets, and that clarifications of statements are made using parentheses).

The first theme related to how participants were feeling. Many wrote about
negative physical symptoms, including pain (i.e., back pain, headaches, muscle aches,
and joint pain) and tiredness or fatigue. These were typically just listed without
additional comments, as in the entry, “Pain – joints, lower back, neck, left wrist, right
ankle – plus headache, fatigue, muscle aches, anxiety.” Many also wrote of negative
emotional states, with mention of anxiety, depression, stress, agitation, and worry.
One woman wrote, “Anxious today. Trying to cope.” Another noted that she felt
“very tense, anxious, and depressed.”

Sleep was also a common theme. Many women wrote about having trouble
sleeping, and, importantly, that practicing the relaxation helped them to fall asleep. “I
fell asleep” was a common entry. One woman wrote, “I floated into dreamland during
the imagery.” In turn, one woman noted that she “woke up refreshed and invigorated”
while another “woke up feeling rested.” Another woman wondered, “I don’t know if I
get so relaxed that I doze off, or if I am so tired that I just can’t wait to hit the pillow.”
Finally, one woman attributed her ability to sleep through the night to her relaxation
practice, writing on one day, “I’ve been sleeping the night thru without waking at all”
and another day, “Sleeping well after practicing the technique.”

During the relaxation, many women experienced positive images and/or
memories. Many mentioned specific places, such as Jamaica, Costa Rica, and Hawaii,
where they had vacationed. One woman regularly wrote of images. Her images were
often related to memories of places she had travelled; however, one image was of a
neighbor’s backyard. She wrote:

   It was as if I had a camera and was slowly filming it in its entirety. I saw her
orchid plants, all the tomatoes on the plants waiting to be picked, her avocado
tree, jacaranda tree. It was as if I was there – calm, quiet, and colorful.

Music was a theme. Sometimes a specific instrument was mentioned or
general comments were made. One participant wrote, “The music was great. I love
piano, and I think at the end violin and flute?” In a later entry she wrote, “Loved the
music and the way it changes throughout the exercise to fit the different stages.”

Another participant shared a memory evoked by the Native American flute:

   First time listening to the American Indian flute. It made me think about the
time I went with my mom to Albuquerque, New Mexico to visit relatives. We
went to see the Indians, I forgot the tribe, and where they made turquoise into
stone. It was a very calm and quiet place. It made you feel like you were back
in time and one with nature.

One woman was able to practice relaxation while sitting on a balcony overlooking the
ocean. She wrote, “I started the music relaxation meanwhile I was looking to the
ocean and sky. Was extremely relaxing.” Another woman wrote, “I have this CD and
love it … transports me to Ireland. The 3rd song always brings tears to my eyes, as it
has such a melancholy sound. I love the pipes and harps.” In a later entry, she noted
her enjoyment of both the relaxation and the music.

   Many entries described positive results of practicing the relaxation. Women
reported pleasant emotional states, such as feeling “great,” feeling “at ease,” or
simply feeling “better.” Others reported an increase in energy, with one woman writing of “extra energy.” She wrote that she was “still going strong,” and that she had “improved stamina” as well as “less tiredness.” She also wrote, “Not every day, but most days I feel more energetic than I have been. My emotions don’t seem to be as strong. I’m more mellow.” Another wrote that she was “relaxed and ready to hit the road again.” Finally, one woman noted that she felt “energized” and “less fatigued.”

Several women mentioned a reduction in stress. One participant felt that practicing the relaxation helped to “eliminate stress.” Another described a practice session as “very liberating. Really made me feel like the stress was flowing right out of my body.” She also mentioned again, at a later date, that she “felt the stress leave.” One woman reported an “ease of tension” and anxiety as the result of her practice.

One noteworthy theme was common to just two participants. One woman, from the MAR condition, wrote “I am so tired from everything I did today that I find myself unable to do anything but listen to the music and Julie’s voice. I cannot do the scrunch/squeeze exercise. Listening to the music is good.” Another woman, from the RA condition, utilized the CD (containing spoken directives only) before a medical procedure. She wrote, “Listened to CD a couple of times before scan although listened to voice more so than actually performing tensing and relaxing exercises. I found the CD to help me relax before the procedure.”

Another theme was also common to two participants, the two women from the RA condition. Both wrote about having trouble focusing. One wrote, “I had difficulties relaxing my mind and letting go of my thoughts.” In a later entry, she
wrote, “Having problems relaxing today. My mind wandering.” The other woman wrote, on one day, “A bit distracted and unable to concentrate on relaxation.” On another day, she wrote, “As usual, I am having a terrible time winding down my day. My mind does not seem to want to shut down as quickly as my body.”

This same participant often mentioned the interruptions that occurred during the silences and felt that the inclusion of music or nature sounds would have been helpful. She wrote, “I tried to focus on imagery of the beach, but found it to be distracting without additional sounds to help the visualization come to life within my mind.” Another time she wrote, “During imagery I was able to imagine the trip I took to Costa Rica just before my diagnosis … Since I imagined Costa Rica, I thought I might attempt to listen to the CD with tropical birds nature sounds.” She mentioned several times that environmental sounds would distract her during the silences; for example, in one entry, she wrote, “Silence during CD allowed hospital noises to creep through,” and in another she wrote, “Prefer the tense and release method in (week) 2 because of the steady steps, as if walking down stairs into relaxation. The beach imagery assisted immensely. Beach sounds might help drown out distracting sounds.”

Two women noted the value of taking time for themselves. One wrote, “I feel good I’m allowing 20 minutes to myself!” Another wrote, after a busy day, “I need to give myself more time.” In a later entry, she reflected on various personal concerns in her life and then wrote:

The benefit of this (session) isn’t lost though because it is forcing me to think about why I’m anxious and when I write in this diary I realize I need to work
more on me and not worry about other people, even if it’s only for 20 – 30 minutes each day.

Semi-Structured Interviews

The Semi-Structured Interviews provided very rich information concerning participants’ thoughts and feelings about the Relaxation Intervention. Notes were taken during every interview and summaries were created by the author. Select interviews were also audio recorded, determined by the availability of individual participants. These recordings were reviewed by the author with selections transcribed verbatim. Then all responses were organized according to the interview questions; a deductive approach was used. Common themes and interesting discoveries are shared below.

What did you think of the sessions, overall?

Participants had an overwhelmingly positive response to both forms of the intervention. Women from both conditions enjoyed the experience, stating the sessions were “excellent,” “really beautiful,” and “helpful.” Some said the sessions allowed them to “forget about everything else.” A participant described it this way, “It didn’t resolve my problems, but I forgot them. For now, I feel great.” Many women also commented that they enjoyed the time for themselves. One participant described it as her “private little time.”

What did you learn about yourself or the skills taught? Many participants stated that they learned the importance of taking time for themselves. Others
commented that they are more aware of stress and, importantly, more aware of their own reactions to stress. One participant said, “When I realize that I’m stressed out then I’m able to use the techniques to kind of de-stress … it helps my emotional mood as well.” Another put it this way, “I’m more in tune with myself, when I’m anxious … (now) I feel more relaxed, like I am capable of having more control over my feelings.”

Of course, participants learned about relaxation. One described relaxation as a skill, something to learn and to practice. “It’s not just flipping a switch!” Many indicated that they simply felt better after the relaxation. Others described the value and importance of relaxation. One said the following:

Not only have I learned the relaxation techniques that I can use in very stressful situations but I do feel like I can catch myself during a stressful moment and, um, move forward in the relaxation to keep myself from (feeling overwhelmed).

**What were the strengths?** Many participants reported benefitting from the discussions of stress. Several women enjoyed the progression of relaxation techniques and the variety that the sessions offered. Others commented on the quality of the spoken voice, describing it as soothing and relaxing. Several women identified the interplay between the music and the spoken voice as a strength; this will be explored in detail with the discussion of the music.

**What were the weaknesses?** Oftentimes, women receiving RA commented that the sessions would have been improved with music. A small number of women
mentioned environmental factors, such as the room being cold or the couch being uncomfortable.

**Which program/technique was your favorite?** This interview was typically conducted immediately following the last relaxation session; therefore, participants had only one experience with the “Ball of Light” Imagery from Session Four. The favorite sessions were the Beach Imagery from Session Two and the Special Place Imagery from Session Three. The beach is certainly a familiar place for women living in South Florida. The Special Place Imagery was also a favorite, with women “travelling” to places such as Peru, the mountains of Oregon, the woods, and a canyon in Spain.

**When you think back to how you felt before the sessions began, and then when you think of how you feel today, are there any differences?**

In response to this question, one woman said the following:

*Participant:* Yes, definitely. I hadn’t taken much time for myself. Now I definitely have an appointment every Monday and I have a daily appointment with myself, but I definitely make sure I do this every day because I know that it benefits me whether it’s that I’m able to stay up longer, that I have more energy, that I’m in a better mood, that I’m more optimistic … I know that by doing this relaxation every day, there’s something I’m going to get out of it.

*Researcher:* You’re feeling better?

*Participant:* Absolutely. And I will continue to do it, even though I’m no longer going to be coming here.
Others, too, noted positive changes in terms of how they were feeling. Many reported feeling more relaxed, with one participant noting, “little things don’t bother me.” For some, this change was dramatic, as stated by one woman, “I don’t feel the stress, I don’t wanna choke nobody anymore. You’re the first therapy I’ve had – I really feel better.”

**What benefits, if any, have you experienced from having had, and survived, breast cancer?**

A majority of women felt their lives were better as the result of having had breast cancer. Many commented on the importance of family, of friends, and of faith. Another common theme was “life is precious.” As one participant said, “I realize how precious life is and I tend to not waste time on things that are of no consequence.” Women look at the world differently as the result of their experience, with one participant saying, “I see a different side of the coin.” Others stated that life is too short and that things are no longer taken for granted.

Some realized the importance of reaching out to other people; “people need people.” As one participant said, “People have been very nice with me, I feel more like being nice to people, too.” She went on to share examples of how she is showing kindness and compassion to others. One participant stated that she is kinder to others and more sensitive to people’s needs. “We’ve all got to pull together!” Another said, “It’s not something you can solve yourself and that’s why you reach out to other people … it brings people together and you learn from those other people.”
Women, too, realized their own strength. “If I can survive this, I can survive anything.” One woman said, “Thank God for breast cancer, ‘cause it’s led me right to where I need to be.” She went on to say:

*Participant:* I’m trying to use my breast cancer to move forward and to, you know, hopefully I suffer so that somebody else doesn’t have to, and, you know take that attitude throughout and just …

*Researcher:* Grow from it?

*Participant:* Yeah, exactly, ‘cause that’s all you can do, you can only learn from, from things and circumstances and grow from those and if you try and stress about it all you’re gonna do is bring yourself, you know, sickness and weakness.

Some women did not feel breast cancer brought with it any benefits. A few participants were puzzled by the question. One woman laughed while saying, “Benefits? *Benefits?* Oh my God … it’s hard for me to think of benefits.” Another woman simply responded, “No … it’s a good experience, but also very difficult.”

**What do you feel the music added, if anything, to the relaxation?**

The music was described in very positive ways. Words such as great, soft, nice, relaxing, and comforting were used to describe the music. One woman said that the music brought “peace.” Many simply said they “loved it.”

Women commented that the music helped to evoke images. One woman said, “Music added more to the place where I go.” Another said music “helps you disconnect and go to another place … it really gets you out of here-and-now and takes
you to another place.” Another said that during the beach imagery, the music “transported me to a place where I’ve been before” and brought to mind the warmth of the sun and the sounds of the ocean. Finally, one participant said, “I am a person that is transported by music,” while another mentioned that music “does activate other senses, you can visualize being in another place.”

It seems that music had an impact on participants’ focus and enjoyment of the relaxation, particularly the imagery-based techniques. One woman said, “music makes your mind go away,” while another said, “music helps prevent the mind from wandering.” Interestingly, many participants in the RA condition felt the music would enhance the relaxation for this very reason.

Participants in the RA condition reported that their minds tended to wander during the silences. As one woman put it, “Your voice was competing with the voices in my head!” For those participants receiving MAR, any silences (i.e., pauses during the script or spoken directives) were, in fact, filled with music. One woman from the RA condition said that her mind is continuously working, with her inner voice always going. She felt that music would have had a “calming, soothing effect.” Another said that music would have brought a focus. One participant said, “I think music … would help one focus on the actual relaxation.” Another said it this way:

Actually because of the pauses I would start maybe relaxing, you know, or just drifting, my mind would start drifting and then the voice would come back on and I would almost be startled at some points because there wasn’t a … something like a lower level of consciousness like, you know, to keep me, you know, right there, still focused …
One participant said that the combination of music and voice allowed her to “trust.” Another described a feeling of safety and contentment elicited by the relaxation experiences. Another said, “Oh, the music, I love the music. It’s nice. I think you did a really good job in synchronizing the music with the relaxation.” She went on to talk about the changes in music within each program:

I found this very interesting because if you have the same music, you kind of get used to that … you start not to notice it. And when it pause and it change instrument or rhythm, then you notice it again. And you come back to it … ‘Oh, okay, it’s there again.’ I found that very interesting and very helpful. The change of music helps you to bring your attention to the room.

Another talked about the interplay of the music and voice this way:

Oh, without the music? Mmm-mmmm [said with negative tone]. It has to be a combination … they enhance each other … when you put words with it, it’s like you get two-for-one. So I say to get maximum benefit you should do a combination … (the music) just, made it the frosting on the cake.

One woman from the MAR condition, who was finished with her treatments at the time of the study, recognized the value of taking time to relax. She felt she is sleeping better, now able to sleep through the night without waking up. She described how MAR helped to lift the “physical tiredness” that remains when treatments are completed:

I do think it’s important to have a technique that will take you outside of yourself and outside of, you know, like, work, and, you know, trying to cope with it, and, you know, being tired, or whatever …. I reached a point … where
I’m not sleepy, I’m just weary, at times, I’m weary. This kind of, like, gets that out of me. It’s like, I can relax … for 20 minutes I am totally relaxed. Even though the cancer is, you know, supposedly gone, and, you know, you’ve had your tests and everything, there is still a physical tiredness that you experience … I think a way of totally releasing it all, you know, through this technique and the music, 20 minutes can be so refreshing. Twenty, 30 minutes can just really take that weariness away from you.

Other comments?

While some participants made it a point and a priority to practice every day, others were busy with families and/or work and were not able to practice during the week. The amount of home practice, then, varied quite a bit. Importantly, however, many women indicated that they would continue to use these techniques and the CDs. Some women who did not practice at all during the course of the study mentioned that they planned to use the CDs in the future.

Summary

Together, the Participant Diaries and the Semi-Structured Interviews brought forward rich information concerning the participants’ thoughts and feelings about the intervention as well as their home practice. The Participant Diaries revealed positive outcomes women experienced as the result of their home practice. Yet the diaries also brought to life personal issues and difficulties women were going through. Participants felt negative physical symptoms in addition to negative emotional states,
which supports research suggesting that the post-treatment recovery phase is challenging and complex. Despite personal issues and challenges, women seemed to indicate positive results from their home practice, such as improved sleep and improved mood.

The Semi-Structured Interviews revealed the positive responses women had to the intervention. Responses suggested that women valued the relaxation and noted the importance of taking time for themselves and becoming aware of the stress in their lives. Many women indicated benefits as the result of having had, and survived, breast cancer. Finally, many interesting thoughts were shared about the music – or absence of music.

Several themes were common to both the Semi-Structured Interviews and the Participant Diaries. One theme involved the positive consequences of the intervention and home practice. Participants used positive terms to describe the relaxation experiences and also to describe their moods. Another common theme was the importance, or awareness, of taking time for oneself.

Many positive comments were made concerning the music. In the Semi-Structured Interviews, music was described in positive ways. It seems that music added a pleasant dimension to the relaxation. Women also commented that music helped to evoke images, often images of familiar beaches or favorite vacation spots. Some women noted that music helped them maintain their focus on the relaxation. An interesting theme involved the partnering of the music and voice, with women appreciating this interplay.
In the Participant Diaries, music was also a theme. Women noted specific instruments that they especially liked. One wrote of a specific memory connected with the sound of the Native American flute; another commented on the change in music within a particular session. Specific places were often mentioned, such as Jamaica, Costa Rica, and North Carolina, as well as beaches of South Florida and California. It seems the music evoked these familiar places.

For women in the RA condition, this function of music was clearly missing. Many found that their minds wandered during the silent moments of the relaxation, or that they would be thinking of “to-do” lists and errands to run. One participant wrote about the distractions of environmental sounds. She went so far as to actually play nature sounds in the background while simultaneously listening to the relaxation CDs.

It seems, then, that music added a pleasurable element to the relaxation. It also helped to evoke images and memories. Music facilitated a positive focus on the relaxation or perhaps helped to maintain participants’ attention on the relaxation. This enhanced focus or increased attention seems to have made the relaxation more effective – or, at the very least, more enjoyable. A visual representation of the analytic process and results is found in Appendix J.
CHAPTER SEVEN

Discussion

The purpose of the present study was to explore the effectiveness of a Relaxation Intervention in providing psychosocial support to women at the completion of treatment for breast cancer. A mixed method design was used, and both quantitative and qualitative data were gathered. Goals of the intervention were to reduce Depression, to improve Affect, and to facilitate Benefit Finding. The intervention was comprised of two conditions: Music-Assisted Relaxation (MAR) and Relaxation Alone (RA). MAR included the use of sedative, soothing music along with standard, spoken relaxation instructions while RA included only standard, spoken instructions. Both forms of the intervention included education and discussion of stress-related topics as well as guidance through four unique relaxation experiences. Participants were provided with diaries in which to record their home practice as well as thoughts about their relaxation practice. Semi-Structured Interviews were also conducted at the close of the intervention to gather information about participants’ evaluation and experience of the intervention. Sessions were held once each week for four weeks.

The Illness Experiences of this Sample

This manuscript began with a description of breast cancer as an illness experience in hopes of capturing the complicated and potentially distressing nature of the disease. Participants in the current study had varying types of breast cancer and varying stages of disease. During the course of the study, some women were
undergoing radiation therapy while some were undergoing chemotherapy. Each type of therapy has unique side effects. Some women in this study lost their hair and were nauseated from chemotherapy treatments. Others experienced fatigue and skin changes as the result of radiation therapy, with painful and uncomfortable burns on their chests and under their arms. Some were experiencing menopausal symptoms induced by Tamoxifen, and struggled with hot flashes and weight gain. A small number of women had other medical conditions, unrelated to breast cancer, while one developed a heart condition related to one of her medications.

Some women had the emotional and financial support of family and friends; others were single or unmarried and continued to work throughout their treatment process. Some women had young children at home while others had grown children living far away. One participant experienced a death in the family during the course of the study. Women had numerous medical appointments in addition to their commitments and obligations at work or at home. As a result, sessions were sometimes cancelled or postponed, which then lengthened the overall time frame of the intervention.

This study included a sample of women at the completion of treatment for breast cancer, a sample that was, by nature, quite heterogeneous. Women had different types of breast cancer, different treatment combinations, and different physical and emotional responses to their treatment(s). Each participant had a truly unique illness experience, and these individual illness experiences unquestionably affected the results of this study.
Depression

Research Question #1

Does Depression change as a function of Intervention Condition from baseline to post-intervention assessment?

Hypothesis

It was predicted that participants randomly assigned to MAR would show statistically significantly greater reductions in Depression than participants randomly assigned to RA.

Conclusions

Results of a Mixed ANOVA suggested that Depression did not change as a function of Intervention Condition from baseline to post-intervention assessment. However, all participants experienced a statistically significant reduction in Depression. In addition, both forms of the intervention had a moderate effect on Depression, based on findings regarding effect size.

For the purposes of this study, Depression was defined as feelings of hopelessness, dejection, poor concentration, lack of energy, and inability to sleep. The qualitative findings indicated positive changes in terms of lack of energy. Participants noted in their diaries that they had more energy and less fatigue as the result of individual sessions and home practice. Hays and Minichiello (2005) also found that involvement with music promoted restored and renewed energy levels.
In addition, positive changes were found concerning participants’ restless sleep. Recall from the item analysis for the CES-D that Item 11 had a high average score, or a large amount of agreement among participants. Item 11 reads, “My sleep was restless.” Participants’ responses indicated they had felt this way “some or a little of the time” or “occasionally or a moderate amount of time.” Quality of sleep seemed to be an area of need for this sample.

Qualitative results suggest that as the result of the Relaxation Intervention, women began to sleep better. Participants often noted in their diaries that they fell asleep. This may seem unimportant or even an undesirable response to the home practice of relaxation; however, if women were having trouble sleeping, this rest may have been both needed and welcomed. One participant from the MAR condition recorded in her diary that she was sleeping through the night, perhaps giving the best example of how restless sleep decreased and quality of sleep improved as the result of the relaxation. This same participant spoke of a physical weariness that remained after the completion of her treatments and stated that MAR was not only refreshing but also took away her lingering feeling of weariness.

After reflecting on the quantitative and qualitative data as well as the definition of Depression, it is not surprising that hopelessness and dejection were not strong themes. Recall that the average scores for both groups on the CES-D reflected low levels of depressive symptoms and that, in general, mood states were high and psychological distress was low among these participants. This trend may reflect literature suggesting that depression is highest at the time of diagnosis and then returns to normal levels within the first year following diagnosis (Burgess et al.,
Since participants in this study enrolled at, or near, the completion of treatment for their breast cancer, their level of Depression, if it had been elevated, may have returned to a normal level.

It was noted in the review of related literature that cognitive-behavioral stress management (CBSM) interventions have been found to decrease depression. In addition, researchers have noted that the breast cancer survivors in their samples have reported low levels of Depression or depressive symptoms (Cruess et al., 2000; Antoni et al., 2001; McGregor et al., 2004). Results of the current study, then, are consistent with existing research, in that participants, overall, reported low levels of Depression.

**Affect**

**Research Question #2**

Does Affect change as a function of Intervention Condition from baseline to post-intervention assessment?

**Hypotheses**

It was predicted that participants randomly assigned to MAR would show statistically significantly greater reductions in Total Distress than participants randomly assigned to RA. It was further predicted that participants randomly assigned to MAR would show statistically significantly greater improvements in Positive Affect, and statistically significantly greater reductions in Negative Affect, than participants randomly assigned to RA.
Conclusions

**Total Distress.** Results of a Mixed ANOVA indicated that Total Distress did not change as a function of Intervention Condition from baseline to post-intervention assessment, although the difference between conditions approached statistical significance in Week Three. All participants experienced a reduction in Total Distress during Week One and Week Two. Results from effect size calculations suggested that, overall, MAR had a small, and positive, influence on Total Distress while RA had a moderate, and negative, influence on Total Distress.

**Positive Affect.** Results using Mixed ANOVA indicated that Positive Affect changed as a function of Intervention Condition, with participants in the MAR condition showing statistically significantly greater improvement in Positive Affect during Week Three. The difference between conditions approached significance in Week Four. All participants experienced an improvement in Positive Affect during Week Two, \( F(1, 18) = 8.554, p = .009 \). Results using effect sizes supported these findings, showing that, overall, MAR had a small, and positive, influence upon Positive Affect while RA had a moderate, and negative, influence on Positive Affect.

Positive Affect was defined as pleasurable engagement with the environment, encompassing feelings such as enthusiasm, energy, mental alertness, and determination. MAR had a notable impact on Positive Affect, with greater improvements among women in this condition than in the RA condition. The inclusion of music seemed to facilitate a pleasurable engagement with the environment.
MAR most likely facilitated a pleasurable engagement with the environment through engagement of the limbic system and the brain reward system. Extant research has identified these brain areas as critical in the perception of music, leading to increased arousal and attention (Hodges, 1996; Thaut, 2005b). Music is associated with pleasurable changes in arousal and these changes are rewarding. Music, then, can promote rewarding and pleasurable affective states (Brown & Theorell, 2006). In the current study, participants made numerous positive comments about the music and described it using favorable terms, such as: great, soft, nice, relaxing, and comforting. Some simply stated they “loved” the music.

Along with a pleasant state of arousal, music is thought to lead to improved attention and a relaxed state of vigilance, also through activation of the limbic system and the brain reward system (Brown & Theorell, 2006; Thaut, 2005b). Results of the current study suggest that MAR facilitated a positive and helpful focus of attention – and that RA did not have these same effects on attention. Participants from the RA condition spoke of their lack of focus during the relaxation experiences, stating that their minds would wander and they would often think of upcoming appointments or other, unrelated plans and ideas. As one participant said, “Music … would help one focus on the actual relaxation.”

One participant, who received MAR, commented on the changes of music within each session. Each session contained a “program” of music comprised of several distinct (although musically related) pieces. This participant said, in part:

When (the music) pause and change instrument or rhythm, then you notice it again. And you come back to it. ‘Oh, okay, it’s there again.’ I found that very
interesting and very helpful. The change of music helps you to bring your
attention to the (relaxation).

It could be that the very nature of music and the sequence of musical selections
within a given session prevented women from becoming accustomed to, or habituated
to, the music.

Supporting evidence for music’s role in improving attention has been
reported. Robb (2000) investigated the effectiveness of four relaxation modalities. A
significant number of participants assigned to the PMR condition (similar to the RA
condition in the current study) reported wandering thoughts during the relaxation
experience (40%). Interestingly, a much smaller number of participants in the music-
assisted PMR condition (similar to the MAR condition in the current study)
experienced wandering thoughts during the relaxation experience (7%). Robb
concluded that the combination of music with a structured relaxation exercise
increased participants’ focus of attention, eased mental tension, and facilitated an
alert state of relaxation (Robb, 2000).

Finally, MAR facilitated positive images and memories through the ecological
properties of the music. Ecological properties involve the associations between a
specific piece, or style, of music and events or memories from the listener’s past. In
the Participant Diaries, one participant frequently wrote about memories evoked by
the music and her home practice of MAR. She mentioned beaches of Key Biscayne,
Hollywood, Naples, Hawaii, and California, in addition to the mountains of North
Carolina, a former neighbor’s backyard, and a trip to New Mexico.
In the Semi-Structured Interviews, women noted that music added an extra element or dimension to their imagery experiences. Some commented that music transported them to another place, such as the beach in Week Two, or another favorite place in Week Three. Hays and Minichiello (2005) found in their qualitative study that music both engaged and inspired participants, creating “another dimension of time” and another “mind space” (p. 446). They further concluded that music had the capacity to stimulate imaginative thought, perhaps explaining the vivid images and memories experienced by participants in the current study.

Eich, Ng, Macaulay, Percy and Grebneva (2007) described a mood modification technique that relies on the combination of music with thought to change mood. The technique involves listening to either uplifting or melancholy music while contemplating thoughts of the same tone, that is, participants thought about happy people, places, or events while listening to uplifting music and depressing people, places, or events while listening to melancholy music. Music maintained desired mood states. Further, when participants were in a positive mood state, they were easily able to recall positive memories and images. In the current study, it may be that music promoted both positive mood states, positive thoughts, and positive memories or images (Eich et al., 2007).

The authors concluded that music facilitated positive mood states that were robust, reliable, and stable (Eich et al., 2007). A pleasant and positive mood was elicited in a short amount of time, specifically in fewer than 20 minutes among the majority of participants. This lends support to the current study, in which relaxation
experiences were 20 to 30 minutes in duration and, for those participants in MAR, included 20 to 30 minutes of exposure to music.

**Negative Affect.** Results using Mixed ANOVA indicated that Negative Affect did not change as a function of Intervention Condition within each session. However, all participants experienced a reduction in Negative Affect during Week One, $F(1, 18) = 6.847, p = .017$, and Week Two, $F(1, 18) = 7.677, p = .013$. Results concerning effect size showed that, overall, MAR had a moderate, and positive, impact on Negative Affect while RA had a moderate, and negative, impact on Negative Affect.

Negative Affect was defined as subjective distress, encompassing a variety of aversive mood states. While scores for Depression, Total Distress, and Negative Affect were low for this sample, the presence of Negative Affect was seen in the Participant Diaries, with women writing of negative physical symptoms as well as negative emotional states. Several noted feeling anxious, worried, and “trying to cope.”

Extant research demonstrates that physical and psychological concerns continue beyond the completion of acute treatments for breast cancer. Fear of recurrence is a prevalent concern among breast cancer survivors (Allen et al., 2009; Shannon & Shaw, 2005). This fear can remain for years, perhaps even a lifetime. Shannon and Shaw (2005) found that fear of recurrence motivated women to engage in health-promoting behaviors. Others identified information and support as two factors that can reduce fear and psychological concerns (Bertero & Chamberlain Wilmoth, 2007). The Relaxation Intervention utilized in the current study offered information as well as support to participants. Indeed, improvements in mood were
noted by participants, reflected in comments that they felt “better,” that they were able to relax and calm down, and that they feel an ease of tension as well as a reduction in stress.

Despite the negative physical symptoms and negative emotional states noted in the Participant Diaries, overall, Negative Affect was low among this sample of women. There is clear support for the use of music to improve and reduce negative mood states; music listening and music-based relaxation have been found to decrease depression, reduce stress, lower anxiety, improve mental health, and enhance relaxation (Bartlett, 1996; Burns et al., 2002; Knight & Rickard, 2001; Mandel, 2007; Mandel et al., 2007; Pelletier, 2004; Robb, 2000; Robb et al., 1995; Scheufele, 2000).

**Benefit Finding**

**Research Question #3**

Does Benefit Finding change as a function of Intervention Condition from baseline to post-intervention assessment?

**Hypothesis**

It was predicted that participants randomly assigned to MAR would show statistically significantly greater improvements in Benefit Finding than participants randomly assigned to RA.
Conclusions

Results of a Mixed ANOVA suggested that Benefit Finding did not change as a function of Intervention Condition from baseline to post-intervention assessment. However, both forms of the intervention had a small influence upon Benefit Finding, based on calculations of effect size.

When asked, in the Semi-Structured Interview, if they had received benefits from having had, and having survived, breast cancer, many women responded affirmatively and noted numerous benefits. A majority of women felt their lives were better as the result of having had breast cancer. Many noted the importance of family, of friends, and of faith. Another common theme was that life is precious. Women realized the importance of reaching out to other people and of being kind and compassionate towards others. Women, too, realized their own strength, with the belief, “If I can survive this, I can survive anything.”

It must be mentioned that two women did not feel breast cancer brought with it any benefits. They also appeared to express a negative reaction to this measure. Others, while noting benefits of their breast cancer, also stated that they were bothered in some way by the questions. Some women felt that certain concepts addressed in the measure were indeed present in their lives, but not as the result of having had breast cancer. For example, one item reads, “Having had breast cancer has brought my family closer together.” Many women stated that their families always were close; they did not feel that breast cancer brought their family any closer than it had been.
One participant made several notes in the margins of her response sheet for this measure. Next to Item 7, which reads, “Having had breast cancer has shown me that all people need to be loved,” she wrote “I’ve always felt this way, but this has helped me realize it more.” Other participants expressed similar sentiments, commenting that they “always knew that” or “always felt that way.” Next to Item 13, which reads, “Having had breast cancer has contributed to my overall emotional and spiritual growth,” this same participant wrote, “I hate to say it because I don’t think I needed this to be better, but probably it did.” In the interview, when asked about benefit finding, she stated:

As much as I hate to admit it, you know, I thought that my life was so good! Everybody has problems, their weaknesses, and of course I have a lot. But I tend to be content with me. I hate to say that an illness this awful brought something good … but it did.

Participants noted benefits and positive outcomes as the result of having survived breast cancer, despite mixed responses to the measure and/or the concept. It could be that the Benefit Finding encapsulates an attitude or a set of beliefs that were in place for many of these women at baseline. Researchers have found that Benefit Finding, as a form of psychological growth, occurs at different rates among different women, based, in part, on amount of support, amount of time spent talking about their cancer, and amount of time since diagnosis (Cordova et al., 2001; Lechner & Antoni, 2004). Other CBSM studies utilized a longer intervention period (i.e., 10 weeks) and have found statistically significant improvements in Benefit Finding (Antoni et al., 2001; Antoni et al., 2006a; Cruess et al., 2000; McGregor et al., 2004).
The Influence of Music

In this study, sedative music was used in conjunction with standard, spoken relaxation techniques in effort to facilitate positive changes in mood. The purpose of MAR was to decrease Depression, to improve Affect, and to facilitate Benefit Finding. Sedative, contemporary music was chosen, meaning selections had a slow tempo, legato phrasing with sustained melodies, predictable and smooth rhythmic elements, uniform dynamic levels, and consonant harmonic structures with traditional, acoustic instrumentation. The music and spoken voice were interwoven with each other, creating a pleasing and suitably complex stimulus.

Both the limbic system and the brain reward system are involved in the perception of music. These systems seek to maintain an appropriate level of arousal, facilitate focus of attention, and then guide emotional responses (Hodges, 1996; Thaut, 2005b). The combination of music and spoken voice contributed to unique stimulus properties. The psychophysical properties included the frequencies, intensities, and waveforms of the stimulus (Berlyne, 1971; McMullen, 1996; Thaut, 2005; Thaut, 2005b). The collative properties, grounded in the basic structures of the stimulus, included the sedative elements of the music paired with the soothing qualities of the spoken voice (Berlyne, 1971; McMullen, 1996; Thaut, 2005; Thaut, 2005b).

Sedative music has been found to influence physiological systems. Music can elicit a relaxation response, with predictable changes in heart rate, blood pressure, muscle tension and levels of anxiety and relaxation (Bartlett, 1996; Burns et al., 2002; Knight & Rickard, 2001; Mandel, 2007; Mandel et al., 2007; Robb, 2000; Robb et al.,
These effects may be even more pronounced within a congruent, relaxing listening environment. Studies have shown that music is most preferred when it matches the purpose and goals of the accompanying activity (North & Hargreaves, 1997, 2000) and may maximize an individual’s response to the given situation. In the present study, sedative music was chosen to complement and enhance the spoken relaxation directives of four unique relaxation techniques. Sessions were held within a congruent, relaxing environment, which matched the goals and purpose of the intervention.

As previously mentioned, both the limbic system and the brain reward system are involved in the processing of music. The perception of sedative and calming sound properties within a similarly soothing environment can lead not only to a relaxation response, but also to a positive emotional response. Music elicits a state of relaxed vigilance through increased arousal and attention that in turn promotes numerous affective and cognitive processes (Brown & Theorell, 2006; Thaut, 2005b), including pleasant images and memories associated with a piece or style of music.

In the current study, participants who received MAR showed a statistically significantly greater improvement in Positive Affect, compared to those participants who received RA, during Week Three of the Relaxation Intervention. The differences between the two conditions approached statistical significance in Week Four. Results of effect size calculations supported these findings, with MAR facilitating a small to moderate improvement in Positive Affect within each session, and a small, yet positive, improvement in Positive Affect over the course of the entire intervention.
Results of this study, then, confirm the positive influence of music upon mood, particularly Positive Affect.

**Limitations**

This study had limitations related to the small sample size and the heterogeneity of the sample. The author wishes to acknowledge the statistical consequences of the small sample size. Obtained results may be viewed as having low statistical power, with a great deal of variance and, in turn, sampling error. In addition, the results may not be fully generalizable. However, there were several advantages with the use of a small sample.

The small sample size allowed for the collection and analysis of qualitative data, which is in-depth and time consuming in nature. It was both efficient and economical for the author to work with a small sample size, given that the author facilitated all of the sessions and collected, managed, and analyzed all of the data. A larger sample size would have made this much more challenging and would have involved an even greater time commitment.

Despite the small sample size, the results of this study have practical significance. Effect sizes were calculated and reported, using Cohen’s $d$, to determine the effect of each Intervention Condition upon each of the Dependent Variables (Depression, Affect, and Benefit Finding). There was a notable treatment effect even though the results of the ANOVAs were not as definitively conclusive as was hoped.

A larger sample size would support more rigorous statistical tests as well as the statistical control of extraneous variables. In turn, stronger conclusions concerning
the effectiveness of each Intervention Condition upon each of the outcome variables could be made. External validity would improve and results could generalize to the larger population of women at the completion of treatment for breast cancer.

Results and conclusions were also limited by the heterogeneity of the sample. Each participant had a very unique set of medical and personal circumstances that impacted the results of this study. Some women experienced financial hardship, loss of loved ones, and the emergence of new medical conditions during the course of the study. The very nature of breast cancer treatments, and their side effects, can influence mood. The Dependent Variables in this study are essentially mood measures; therefore, the study outcomes were highly influenced by indeterminate, unknown factors related to breast cancer: its very presence, its treatments, and the side effects of those treatments.

It could be that women who chose to participate in this study were different in some way than those who did not wish to participate. Women in this sample had low levels of psychological distress, seen in low Depression, low Total Distress, and low Negative Affect. Perhaps the women who did not agree to participate, or those that withdrew from the study, had higher levels of psychological distress or were different from this sample of women in other, unknown ways.

**Directions for Future Research**

There are many possible directions for future research. The study could be replicated with a similar sample and in similar research locations; data could then be pooled together to allow for more powerful statistical analyses. This would
potentially strengthen both the quantitative analyses and the qualitative analyses. In addition, results could be analyzed according to intervention *location* in addition to intervention condition. For example, differences may be found when examining results obtained from women who were recruited at, and completed their sessions at, the SCCC compared with women who were recruited at, and completed their sessions at, the Wellness Community.

This study could also be replicated with a more highly focused sample, such as women at the completion of radiation treatments or women who had completed all acute treatments. Narrowing the inclusion criteria would lead to greater homogeneity within the sample and could strengthen the quantitative results. Conversely, it may be helpful and beneficial to broaden the inclusion criteria, offering this intervention to women at an earlier point in their illness experience, perhaps closer to the time of diagnosis. Not only would women then have concrete tools and techniques to use throughout their treatments, this might also reach women at a time when the intervention would be most effective.

If using a larger sample size, more thorough demographic data would be useful. Information concerning the amount of social support, level of income, level of education, and employment status would be helpful and could inform the results and interpretation. More accurate medical information concerning the type of breast cancer and stage of disease would also have been useful for the same reasons. These variables could be accounted for statistically with an appropriate sample size.

It is recommended that future studies allow for greater accessibility to the relaxation sessions. Many women from the current study were unable to continue
sessions when their treatments came to an end, because they could not travel to the research location and/or they were simply too busy. Sessions should be offered in multiple locations, on multiple days of the week, and at multiple times of the day to maximize participation.

**Closing Thoughts**

The author concludes that the Relaxation Intervention used in this study was both appropriate and effective in providing psychosocial support to women at the completion of treatment for breast cancer. Both forms of the intervention led to improvements in mood – seen in results obtained from quantitative measures as well as the spoken and written comments of participants. However, music added an additional aesthetic dimension to the relaxation experience, facilitating greater focus of attention, greater improvement in mood, meaningful images and memories, and an enhanced quality of the experience. Music may have improved the quality of life of the breast cancer survivors who participated in this study – as observed within individual sessions, as demonstrated across the four sessions, and, it is hoped, continued beyond the conclusion of the sessions to everyday life.
Appendix A
Informed Consent Form

UNIVERSITY OF MIAMI

CONSENT TO PARTICIPATE IN A RESEARCH STUDY

“The Influence of Music on Depression, Affect, and Benefit Finding Among Women at the Completion of Treatment for Breast Cancer”

The following information describes a research study in which you are being asked to participate. Please read the information carefully. Following the study purpose and description, you will be asked to sign if you agree to participate.

PURPOSE OF STUDY:

You are being asked to participate in a research study. The purpose of this study is to examine the influence of music assisted relaxation on the quality of life of women at the completion of treatment for breast cancer.

PROCEDURES:

Should you agree to participate, you will be involved in the following steps:

Step One: Pretest Measures. These measures will be completed prior to the start of the group interventions and should take about 20 minutes to complete.

1. You will be asked to complete the “Participant Information” form. This form asks you for information such as your age and health status. Medical records
will not be reviewed; therefore, relevant medical information must be given by you when applicable (such as stage of breast cancer and type of treatment).

2. You will be asked to complete the “Music Background Questionnaire.” This questionnaire asks you for information about your musical experiences, listening habits, and training.

3. You will also be asked to complete two short inventories to assess depression and benefit finding. These questionnaires ask you for information about your mood and ways you might have felt or behaved while you had breast cancer.

**Step Two: Group Intervention or Individual Sessions**

1. You will be assigned to either a music-assisted relaxation condition or a relaxation alone (that is, without music) condition.

2. Each group (or individual session) will occur once a week for four weeks. Each session will be approximately 90 minutes long. During each session, you will:

   a. Learn about a stress-related topic
      i. Awareness of stress
      ii. Appraisal and responses to stress
      iii. Reactions to stressors
      iv. Use of resources and support
   
   b. Learn a relaxation technique

   c. Have the opportunity to share and talk with other group members, or with the Co-Investigator
Before and after each session, you will complete a short mood inventory. You will be encouraged to practice the relaxation techniques at home and keep a diary between sessions to record the amount of time you spent practicing the relaxation techniques at home.

**Step Three: Posttest Measures. These measures will be completed at the completion of the group interventions or individual sessions and should take about 40 minutes to complete.**

1. You will be asked to complete two short inventories to assess depression and benefit finding (the same scales used in the pretest).
2. The diary will be collected.
3. You will be asked to participate in an interview with the Co-Investigator. The interview will ask questions about your thoughts and feelings on the group or the individual sessions. The interview will be audio recorded to make sure all responses are captured.

**RISKS AND/OR DISCOMFORTS:**

You may feel some distress from answering some of the measures. You may decline to answer any question or questions that make you feel distressed.

**BENEFITS:**

No benefit can be promised to you from your participation in this study. In the short term, it is hoped that participation in this study will give you the opportunity to (1) learn about stress and how it affects you, (2) learn specific relaxation techniques that
can help reduce stress, and (3) interact with other women who are at the end of treatment for breast cancer. In the long term, it is hoped that this study will help determine how music can influence relaxation, depression, affect, and benefit finding. This information may be used in the development of music therapy support groups for individuals who have cancer and/or music assisted relaxation methods that could be utilized by individuals who have cancer.

CONFIDENTIALITY:

Records related to this study will be kept in a locked filing cabinet within a home office. Only the Primary Investigator and Co-Investigator will have access to these files. Identification codes will be used in place of names. All files and audiotapes will be given a code number and stored in separate locked files. Your name will not be on the tapes. After the audio tapes are transcribed, they will be destroyed.

The investigators and their assistants will consider your records confidential to the extent permitted by law. The U.S. Department of Health and Human Services (DHHS) may request to review and obtain copies of your records. Your records may also be reviewed for audit purposes by authorized University or other agents who will be bound by the same provisions of confidentiality.

We will ask all participants that comments made during the group intervention be kept confidential.
COSTS:

You may need to pay for parking, if your assigned group or individual session meets at the Sylvester Comprehensive Cancer Center.

COMPENSATION:

If your assigned group or session meets at the Flipse Building, on the Coral Gables campus, you will receive a parking pass.

All participants will receive a complimentary diary. You will also receive four compact discs, one each week, containing the relaxation scripts (and music, for those in the music assisted relaxation group) used during the session.

RIGHT TO DECLINE OR WITHDRAW:

Your participation is voluntary. You are free to refuse to participate in the study or withdraw your consent at any time during the study. Your withdrawal or lack of participation will not affect the treatment you are receiving at the Sylvester Comprehensive Cancer Center or at the University of Miami. The Investigators reserve the right to remove you without your consent at such time that they feel it is in your best interest.

CONTACT INFORMATION:

- This is a doctoral research project. Julie Stordahl, MA, MT-BC will serve as Co-Investigator and will gladly answer any questions you may have concerning the
purpose, procedures, and outcome of this project. She may be contacted at the University of Miami at (305) 284 – 6189.

- This research project will be supervised by Teresa Lesiuk, Ph.D., MT-BC. She will serve as the Principal Investigator and may be contacted at the University of Miami at (305) 284 – 3650.

- If you have any questions about your rights as a research subject you may contact Human Subjects Research Office at the University of Miami at (305) 243 – 3195.

PARTICIPANT AGREEMENT:

I have read the information in this consent form and agree to participate in this study. I have had the chance to ask questions I have about this study, and they have been answered for me. I am entitled to a copy of this form after it has been read and signed.

_________________________________  ______________________
Signature of Participant                Date

_________________________________
Signature of Person Obtaining Consent  Date
AUDIO RECORDING:

[ ] I agree to be audio recorded during the interview.

[ ] I do not agree to be audio recorded during the interview.

____________________________________  ________________________
Signature of Participant                  Date

____________________________________  ________________________
Signature of Person Obtaining Consent     Date
FOR HELP, SUPPORT, OR REFERRAL INFORMATION:

American Cancer Society
(305) 594 – 4363
www.cancer.org

National Cancer Institute
1 – 800 – 4 – CANCER
www.cancer.gov

Susan G. Komen Foundation
1 – 800 – 462 – 9273
www.komen.org

The Wellness Community
(305) 668 – 5900
www.twcmiami.com

The American Psychosocial Oncology Society at www.apos-society.org has a toll-free helpline to help people with cancer and their caregivers find counseling services in their own communities.

The American Psychological Association has an online locator service at http://locator.apahelpcenter.org/index.cfm to help people find a psychologist.
Appendix B

Participant Information Form

**General Information**
What is your age? _________

Please describe your ethnic or cultural group?

- [ ] Caucasian
- [ ] Hispanic
- [ ] African American
- [ ] Asian American
- [ ] Native American
- [ ] Other

Please list: ____________________

**Medical Information**
Have you ever had breast cancer?

- [ ] No
- [ ] Yes (if yes, please answer the following 4 questions)

When were you diagnosed with breast cancer?

Month and year: ________________

What type of breast cancer did/do you have?

Please list: ____________________

What was/is the stage of your breast cancer?

- [ ] I
- [ ] II
- [ ] III
- [ ] IV
Which of the following treatments have you, or are you, completing:

☐ Surgery
☐ Chemotherapy
☐ Radiation
☐ Medication

When did you, or will you, complete your treatment(s) for breast cancer?
Month and year: ________________
Appendix C
Musical Background Questionnaire

Part I: Level of Music Education
Childhood

☐ General music class
☐ Music lessons at school
  Instrument: ____________________________  Number of years: ___
☐ Private music lessons
  Instrument: ____________________________  Number of years: ___
☐ Member of band or chorus

Adulthood

☐ Studied music in college
☐ Amateur musician
☐ Hold degree in music
☐ Professional musician, music educator, or music therapist

Part II: Amount of Music Listening
How often do you listen to music?

☐ Rarely
☐ Seldom
☐ Frequently
☐ Always
What style(s) of music do you most enjoy?

☐ Popular
☐ Spiritual
☐ Rap/Hip-Hop
☐ Classical
☐ Other

Please list: ____________________________________________

How often do you go to concerts or other musical performances?

☐ Never
☐ Seldom (one or two times a year)
☐ Frequently (once every couple of months)
☐ Very often (more than once a month)

How often do you listen to classical music?

☐ Never
☐ Seldom (once or twice a month)
☐ Frequently (two or three days per week)
☐ Very often (every day)

How well do you know the classical music repertoire?

☐ Not at all
☐ Some
☐ Quite well
☐ Very well
Appendix D

The Center for Epidemiologic Studies – Depression Scale

Directions: Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past month.

1. I was bothered by things that usually don’t bother me.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 – 2 weeks)
   d. Most or all of the time (3 – 4 weeks)

2. I did not feel like eating; my appetite was poor.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

3. I felt that I could not shake off the blues even with help from my family or friends.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

4. I felt I was just as good as other people.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)
5. I had trouble keeping my mind on what I was doing.
   a. Rarely or none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

6. I felt depressed.
   a. Rarely or none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

7. I felt that everything I did was an effort.
   a. Rarely or none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

8. I felt hopeful about the future.
   a. Rarely or none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

9. I thought my life had been a failure.
   a. Rarely or none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)
10. I felt fearful.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

11. My sleep was restless.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

12. I was happy.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

13. I talked less than usual.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)
15. People were unfriendly.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

16. I enjoyed life.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

17. I had crying spells.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

18. I felt sad.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)

19. I felt that people dislike me.
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)
20. I could not “get going.”
   a. Rarely of none of the time (less than 1 week)
   b. Some or a little of the time (approximately 1 week)
   c. Occasionally or a moderate amount of time (1 - 2 weeks)
   d. Most or all of the time (3 - 4 weeks)
### Appendix E

**The Profile of Mood States – Short Form**

Directions: For each word, please indicate how you feel right now.

<table>
<thead>
<tr>
<th></th>
<th>Not at all</th>
<th>A little</th>
<th>Moderately</th>
<th>Quite a bit</th>
<th>Extremely</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alert</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Bitter</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Blue</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Carefree</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Considerate</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Deceived</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Friendly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Furious</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Good Natured</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Helpful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. Panicky</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. Resentful</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. Terrified</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. Trusting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>
Appendix F

The Benefit Finding Scale

Directions: Below is a list of ways you might have felt or behaved about having breast cancer. Please indicate how much you agree with each statement (“Having had breast cancer. . .”).

1. Has led me to be more accepting of things.
   a. Not at all
   b. A little
   c. Moderately
   d. Quite a bit
   e. Extremely

2. Has taught me how to adjust to things I cannot change.
   a. Not at all
   b. A little
   c. Moderately
   d. Quite a bit
   e. Extremely

3. Has helped me take things as they come.
   a. Not at all
   b. A little
   c. Moderately
   d. Quite a bit
   e. Extremely
4. Has brought my family closer together.
   a. Not at all
   b. A little
   c. Moderately
   d. Quite a bit
   e. Extremely

5. Has made me more sensitive to family issues.
   a. Not at all
   b. A little
   c. Moderately
   d. Quite a bit
   e. Extremely

6. Has taught me that everyone has a purpose in life.
   a. Not at all
   b. A little
   c. Moderately
   d. Quite a bit
   e. Extremely

7. Has shown me that all people need to be loved.
   a. Not at all
   b. A little
   c. Moderately
   d. Quite a bit
   e. Extremely
8. Has made me realize the importance of planning for my family’s future.
   a. Not at all
   b. A little
   c. Moderately
   d. Quite a bit
   e. Extremely

9. Has made me more aware and concerned for the future of all human beings.
   a. Not at all
   b. A little
   c. Moderately
   d. Quite a bit
   e. Extremely

10. Has taught me to be patient.
    a. Not at all
    b. A little
    c. Moderately
    d. Quite a bit
    e. Extremely

11. Has led me to deal better with stress and problems.
    a. Not at all
    b. A little
    c. Moderately
    d. Quite a bit
    e. Extremely
12. Has led me to meet people who have become some of my best friends.
   a. Not at all  
   b. A little  
   c. Moderately  
   d. Quite a bit  
   e. Extremely  

13. Has contributed to my overall emotional and spiritual growth.
   a. Not at all  
   b. A little  
   c. Moderately  
   d. Quite a bit  
   e. Extremely  

14. Has helped me become more aware of the love and support available from other people.
   a. Not at all  
   b. A little  
   c. Moderately  
   d. Quite a bit  
   e. Extremely  

15. Has helped me realize who my real friends are.
   a. Not at all  
   b. A little  
   c. Moderately  
   d. Quite a bit  
   e. Extremely
16. Has helped me become more focused on priorities, with a deeper sense of purpose in life.
   a. Not at all
   b. A little
   c. Moderately
   d. Quite a bit
   e. Extremely

17. Has helped me become a stronger person, more able to cope effectively with future life challenges.
   a. Not at all
   b. A little
   c. Moderately
   d. Quite a bit
   e. Extremely
Appendix G
Participant Diary

Today’s Date: ______________________

Today, I practiced relaxation practiced from __________ to __________.

Please comment on the relaxation experience. You might include your mood or any pain and fatigue you are feeling. Or, you might write about the music or any images you had while relaxing.
Appendix H

Semi-Structured Interview

First, I’d like to ask you about our sessions.
   a. What did you think of them?
   b. What did you learn?
      1. About yourself?
      2. About the skills taught?
   c. What would you say were the strengths of the sessions?
   d. What would you say were the weaknesses of the sessions?

Now, I’d like to ask you more specifically about your experience of the sessions.
   a. When you think back to how you felt before the sessions started, and then when
      you think of how you feel today, are there any differences?
      1. What are the differences?
      2. Can you give me an example?
      3. What do you attribute the change to?

What benefits, if any, have you experienced from having had, and survived, breast

cancer?

*For Music-Assisted Relaxation condition:*

What did you think of the music used throughout the sessions?
What do you feel the music added, if anything, to the relaxation?
Did the music influence your home practice? If so, how?

Is there anything you would like to mention, that you feel is important, that you *haven’t*
been asked?
Appendix I

Sample Relaxation Script

Excerpt from Week One: Progressive Muscle Relaxation

We are going to begin with a focus on the breath. Breathe in slowly through your nose. Feel the air fill the abdomen ... feel the stomach rise with the inhalation ... feel the lungs fill with air. Inhale fully ... and then very slowly exhale. Feel the lungs collapse ... feel the stomach and abdomen empty.

Let’s do that one more time. This time, as you inhale, imagine all of your muscles filling with air and expanding. Again, feel the air fill the abdomen ... feel the stomach rise with the inhalation ... feel the lungs fill with air. Exhale slowly, feeling the lungs collapse ... allow the stomach and abdomen to sink inward. Imagine all of your muscles slowly relaxing, leaving you feeling very relaxed and heavy as you sink into the support beneath you.

Take a moment to notice how differently your body is already feeling, how much more relaxed you feel, just by focusing on the breath ... inhaling deeply, exhaling completely.
All women enjoyed the individual sessions and reported benefits from them. However, music was reported to add certain dimensions to the relaxation. It helped to increase focus and attention on the relaxation and prevented intrusive thoughts. Positive feelings were elicited in response to MAR as well as positive images and memories.

<table>
<thead>
<tr>
<th>Overall Theme</th>
<th>How women were feeling</th>
<th>Absence of music</th>
<th>Influence of music</th>
<th>Outcomes and changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Themes</td>
<td>Negative physical symptoms</td>
<td>Negative emotional symptoms</td>
<td>Poor focus and attention</td>
<td>Increased focus, attention</td>
</tr>
<tr>
<td>Axial Codes</td>
<td>Back pain, Headache, Muscle aches, Joint pain, Fatigue, Trouble sleeping, Stress, Anxiety, Worry, Depression, Tense</td>
<td>&quot;Difficulties relaxing my mind and letting go of my thoughts&quot;</td>
<td>&quot;Music helps prevent the mind from wandering&quot;</td>
<td>&quot;Birds soaring&quot;</td>
</tr>
<tr>
<td>Open Codes</td>
<td>&quot;My mind does not want to shut down&quot;</td>
<td>&quot;My mind going away&quot;</td>
<td>&quot;I didn't resolve my problems, but I forgot them&quot;</td>
<td>&quot;Activates your other senses&quot;</td>
</tr>
</tbody>
</table>


