

The Effect of Music on Pain Relief and Relaxation of the Terminally Ill

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The purpose of the present study was to examine the effects of music on terminally ill patients' perceived degree of pain relief, physical comfort, relaxation, and contentment. The subjects were white, English- and French-speaking terminally ill patients; four males and five females participated in the study. The four dependent variables were self-recorded by the subjects on a modified Scott-Huskisson graphic rating scale under three conditions: (a) no intervention, (b) background sound, and (c) music. The order of condition presentation was ABACA for five subjects and ACABA for the remaining four subjects. Each condition was presented for 15 minutes, twice daily for 2 days. A Friedman Two-Way Analysis of Variance indicated no significant difference in the dependent variables under the experimental conditions; contentment score differences, however, approached significance ($p < .069$). A Kruskal-Wallis One-Way Analysis of Variance indicated no significant difference according to severity of illness; however, graphic analysis of individual responses indicated that music may have been effective.

Pain perception is a complex phenomenon, consisting not only of the original sensation but also of the resultant psychological response (Beecher, 1957). The term *pain circle* is frequently used to describe the process through which pain produces or increases psychological components, which in turn increase pain or sensitivity to pain (Mount, 1980; Noyes, 1981). Psychological components common to all pain types include cultural and social factors, age, sex, race, marital status, religious beliefs, and emotional states (Espin & Ganikos, 1975;

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Gibbs & Achterlawhs, 1978; Woodrow, Friedman, Sieglaub, & Collen, 1972). For the terminally ill, these emotional states may include anxiety, fear of death, uncertainty, low self-esteem, self-absorption, depression, financial and family worries, and anticipation of pain (Beecher, 1957; Melzack, Ofiesh, & Mount, 1976; Mount, 1980).

Research examining the nature of pain indicates that, in oncology pain management, a multidisciplinary approach with expanded use of psychological interventions is most effective (Melzack et al.; Twycross, 1978). Music therapy, however, has only recently been included as a part of the pain management regimen.

Music can elicit both physiological and psychological responses (Fisher & Greenberg, 1972; Hyde, cited in Schoen, 1968; Landreth & Landreth, 1974; Peretti & Swenson, 1974). These physiological responses—changes in respiration rate, cardiovascular activities, and galvanic skin response—are influenced by musical styles and elements as well as by the listener's preference and past experience (DeJong, Van Mourik, & Schellekens, 1973; Peretti, 1975). Individual influences, combined with researchers' inadequate methods of categorizing music as either sedative or stimulating (Taylor, 1973), might account for the few instances of contradiction concerning the psychological effects of music. Despite these inconsistencies, the majority of research indicates that sedative music can be effective in reducing anxiety (Fisher & Greenberg; Peretti & Swenson).

Research regarding the specific use of sound and music as analgesics (*audioanalgesia*) confirms their effectiveness as distractors, suppressors of pain, and relaxation agents (Gardner & Licklider, 1959; McDowell, 1966; Morosko & Simmons, 1966). The failure of earlier studies to corroborate these effects was due to neglect of the role of psychological factors such as suggestion of effectiveness, subject control of volume, content (i.e., white noise versus music), and duration (Buchsbaum, Lavine, & Poncy, 1976; Melzack, Weisz, & Sprague, 1963).

Research concerning the use of music therapy in pain management has been sparse and limited in both scope and nature. A review of the literature indicates only two instances of actual experimental research. Wolfe (1978) demonstrated experimentally that music therapy was effective in inhibiting the percep-

tion of chronic pain, as expressed through verbal complaints. Through experimental research, Chetta (1980) demonstrated that music therapy was successful in reducing anxiety and "fear behaviors" in preoperative pediatric patients.

Research concerning music therapy in pain management for the terminally ill is further limited to philosophical treatises and narrative reports of case studies. Gilbert (1977) and Edwards (1981) enumerated the advantages of music therapy for use with the terminally ill. Munro and Mount (1978) discussed six of their own case studies to illustrate the benefits of music therapy with the terminally ill. These positive reports underscore the need for experimental research examining the effectiveness of music therapy in oncology pain management.

The purpose of the present study was to investigate the effect of music upon the perceived degree of pain relief, physical comfort, relaxation, and contentment of the terminally ill. The following null hypotheses were evaluated:

1. There will be no significant difference in terminally ill patients' perceived degree of pain relief, physical comfort, relaxation, and contentment during conditions of no intervention, tapes of background hospital sounds, or music listening.
2. During the music listening condition, there will be no change in the dependent variables related to severity of illness.

Method

Subjects

The subjects were 17 white, English- and French-speaking patients. All subjects were diagnosed as having a terminal malignant disease, with therapeutic intervention directed exclusively at palliation rather than cure or prolongation of life. Subjects had to be sufficiently alert to complete the necessary forms. Of the original subjects, eight were eliminated due to schedule conflicts, deteriorating physical status, and/or an urgent need for music therapy on a continuous basis.

Based upon information obtained from the head nurse, each subject was assigned an illness severity score, and subjects were then grouped according to the resultant scores. General physical condition was rated numerically as Fair (3), Good (2), or Very Good (1). The estimated lengths of survival were assigned

TABLE 1

Classification of Subjects According to Severity of Illness

	Group											
	1			2				3			4	
Subject Number	5			2	4	8	9	1	3	7		6
Severity Score	2			4	4	4	4	5	5	5		6

the following values: Weeks to Months, 3; 4 to 11 months, 2; Months to Years, 1. A high score therefore corresponded to a greater severity of illness (Table 1).

Setting

The study was conducted in the Palliative Care Units of two affiliated Canadian hospitals, the Royal Victoria and the Montreal Convalescent hospitals. The units had a capacity of 16 and 21 beds respectively, with each room accommodating either one or four patients. All subjects were exposed to the experimental conditions individually at their bedside with the privacy curtain drawn.

Materials

Portable tape recorders and lightweight earphones were used. A personalized 15-minute tape recording was made for each subject based on his or her stated preference and perception of the calmness of music excerpts presented from a master tape. (For a comprehensive description of music selection procedures, see Curtis, 1982.)

Data Collection

Self-reporting of pain and pain relief has been demonstrated to be both necessary and reliable (Clarke & Spear, 1964; Pilowsky & Kaufmann, 1965; Scott & Huskisson, 1976); therefore, the four dependent variables were measured by the subjects themselves. A modified graphic rating scale (GRS) recommended by Scott and Huskisson was selected for use because of its reliability, sensitivity to smaller degrees of change, and ease of modification for measuring a variety of responses. The GRS consisted of a 10-cm horizontal line accompanied by de-

scriptive terms of subject response (Curtis, 1982). Each GRS was divided into 20 segments and treated nonparametrically.

Design

During this study, the following experimental conditions were implemented:

1. No intervention (A): All medical and psychosocial treatments except music therapy were continued.

2. Background sound (B): The subject was instructed to relax as much as possible while listening to a 15-minute tape of background hospital sounds.

3. Music (C): The subject was instructed to relax as much as possible while listening to a 15-minute tape of calm, preferred, instrumental music.

Each experimental condition was implemented once in the morning and once in the afternoon, 1–3 hours after administration of medication. The one exception to this time schedule was instituted with a patient for whom implementation was necessarily yet consistently 30 minutes after administration of medication. Subjects were given complete control of the volume level of the background sounds and music tapes. Following each condition, the self-recording form was completed.

Subjects were randomly assigned to one of two orders of presentation. The order of presentation was ABACA for five subjects and ACABA for the remaining four subjects. Each condition was presented for 15 minutes, twice daily for 2 days. Total duration of the study was 10 days per patient; the average patient stay was 11 days.

Procedure

As each patient was admitted to the unit, the head or assistant head nurse was consulted to assess severity of illness and to ascertain whether the criteria for participating in the experiment were met. Prior to beginning the experiment, each patient was individually provided with a neutrally worded explanation of the study. After completing the consent and self-recording forms, each patient was asked to rate music excerpts recorded on a master tape. All explanations were given verbatim.

Results

The means of the four dependent variables were determined for each of the three experimental conditions: no intervention, background sound, and music. Results of a Friedman Two-Way Analysis of Variance indicated that, in all four cases, no significant difference separated the mean scores under the three conditions. The difference in contentment scores, however, approached significance ($p < .069$).

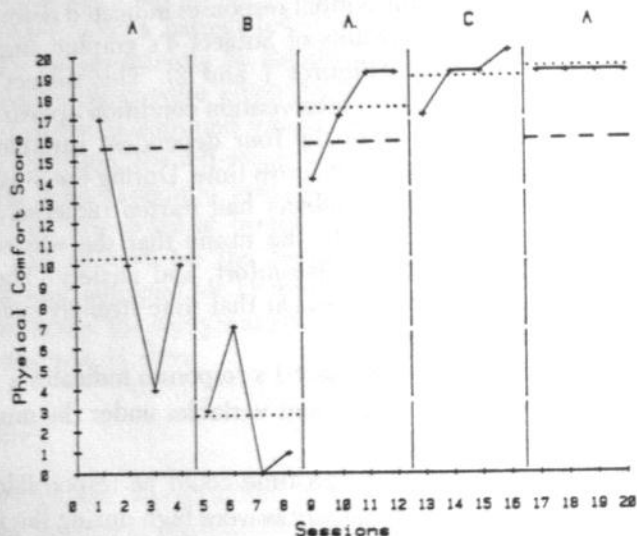
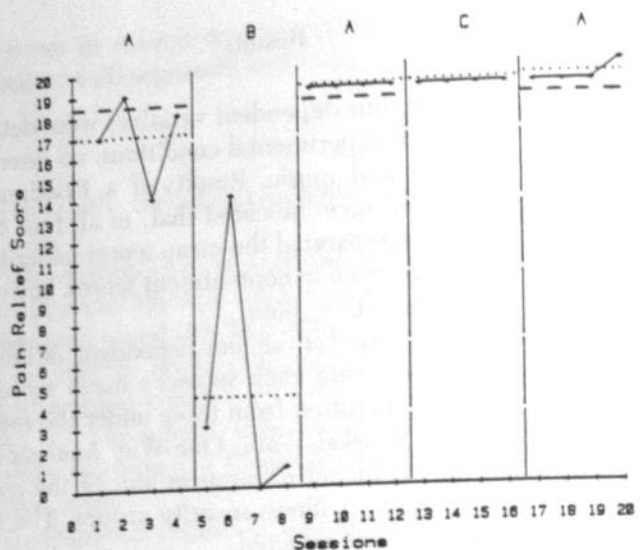
Mean difference scores for the four dependent variables were determined by subtracting each subject's mean scores under the no intervention condition from those under the music condition. Results of a Kruskal-Wallis One-Way Analysis of Variance revealed no significant differences among the mean difference scores of the four illness severity groups. The two null hypotheses thus were not rejected.

Despite the failure to achieve statistically significant results, graphic analysis of individual responses indicated definite noteworthy trends. The results of Subject 4's graphic analysis are the most important (Figures 1 and 2). This subject's scores during the recurrent no-intervention condition appear to indicate that the increase in the four dependent variables was a result of a general increase across time. During the 2-day music condition, however, the subject had started radiotherapy and stated prior to listening to the music that she was suffering from considerable pain, discomfort, and anxiety. The subsequent high scores in all areas at that time strongly suggest the effectiveness of music.

Graphic analysis of Subject 1's responses indicates a marked increase for all four dependent variables under the music condition (Figures 3 and 4).

A general decrease across time could be responsible in the case of Subject 6, since all scores were high during the first two conditions and then dropped markedly. However, it cannot be determined whether the music condition occurred before the drop or was responsible for a delay in the drop.

In all three cases, the background sound condition appeared to have a negative effect. This result implies that background music might be beneficial for masking environmental sounds.

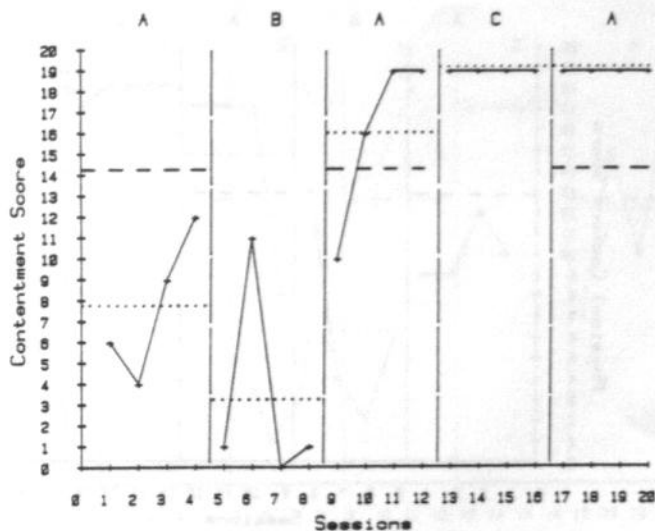
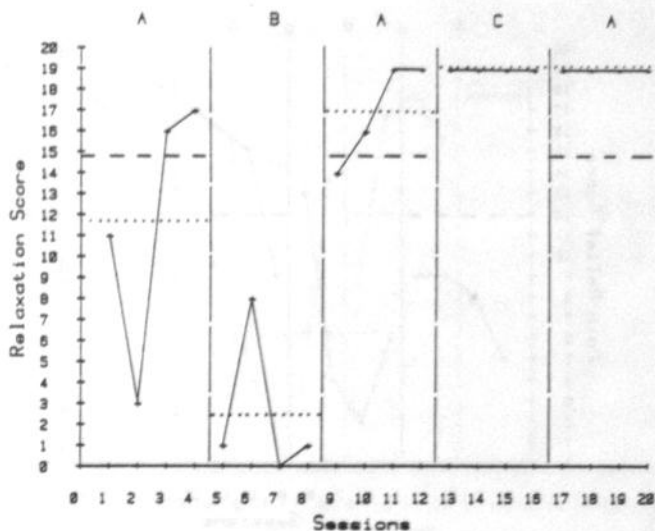


.... Mean

--- Mean of Total No Intervention Conditions

FIGURE 1.

Pain relief and physical comfort scores of Subject 4 under all conditions.

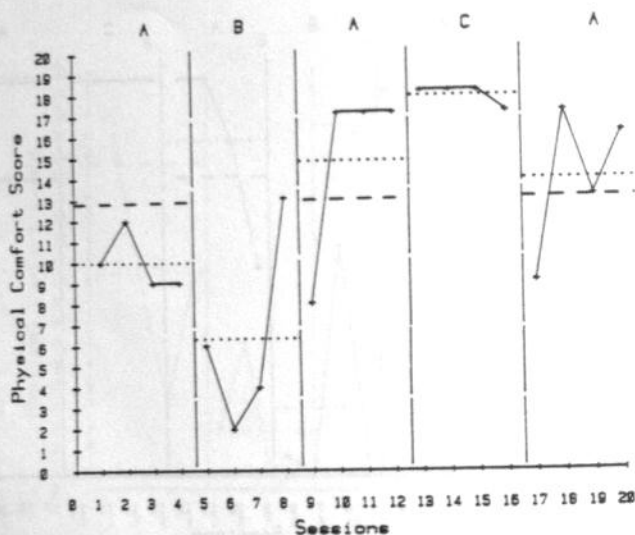
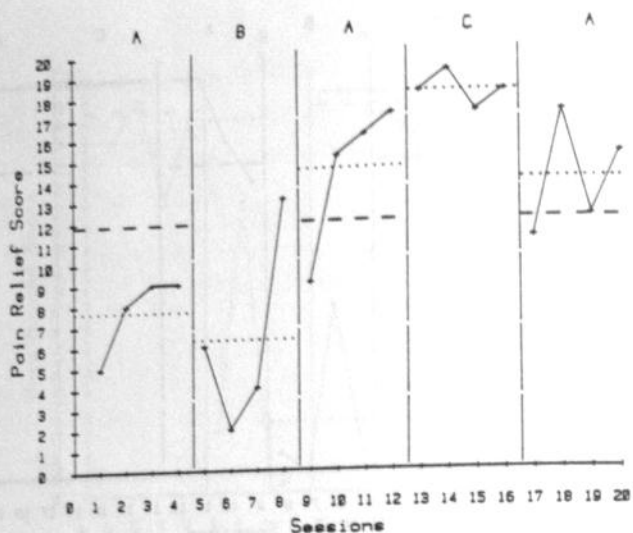


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FIGURE 2.

Relaxation and contentment scores of Subject 4 under all conditions.

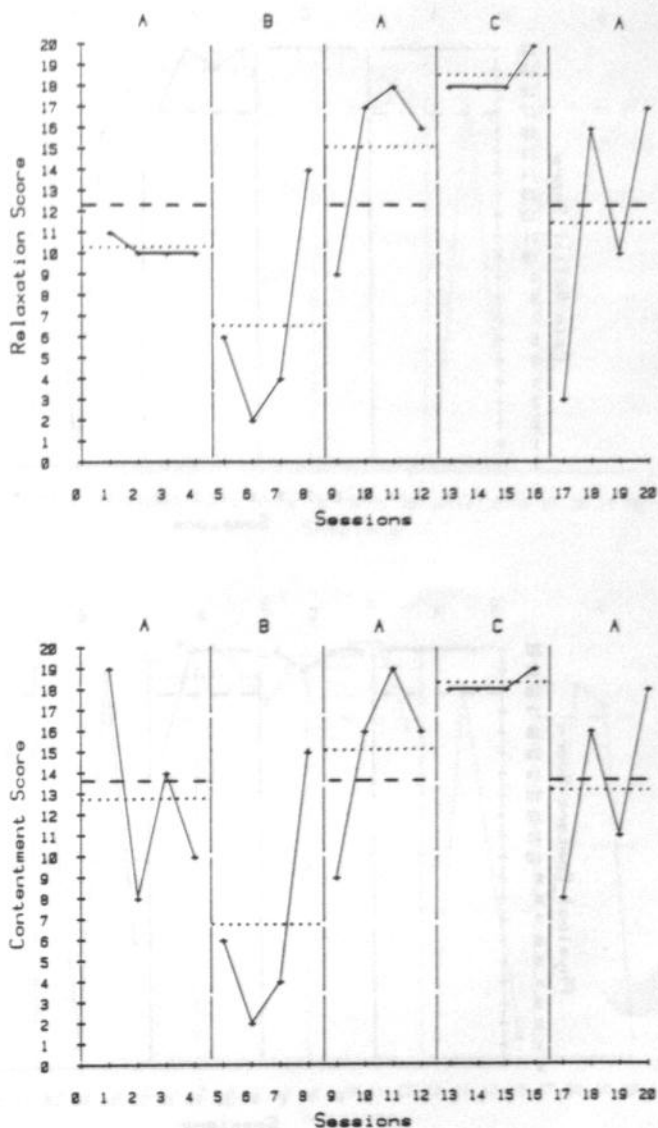


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FIGURE 3.

Pain relief and physical comfort scores of Subject 1 under all conditions.

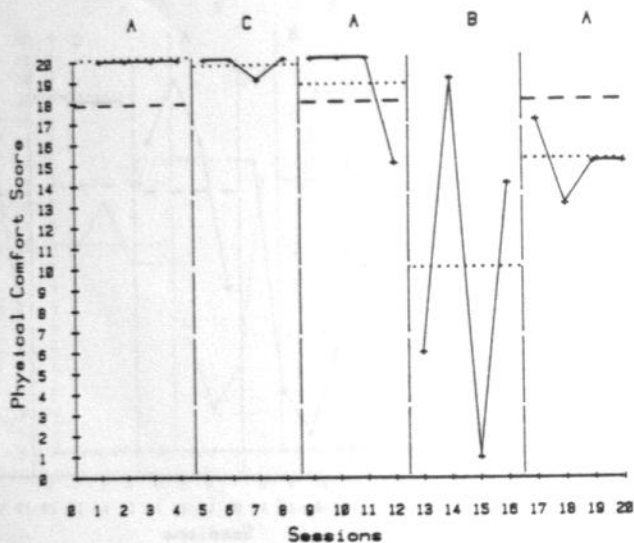
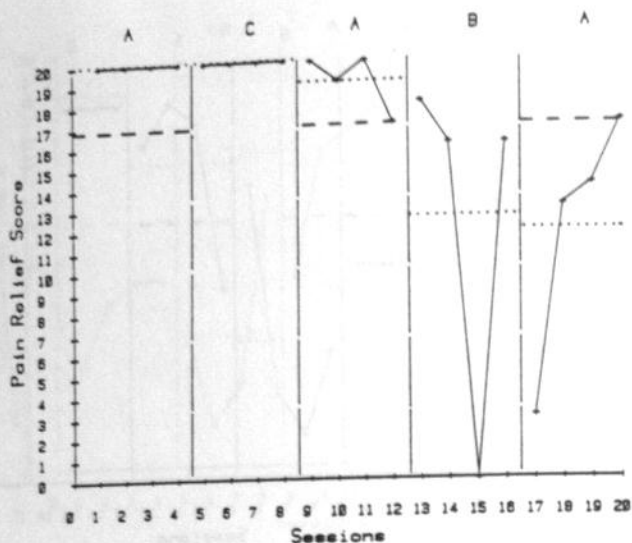


.... Mean

--- Mean of Total No Intervention Conditions

FIGURE 4.

Relaxation and contentment scores of Subject 1 under all conditions.

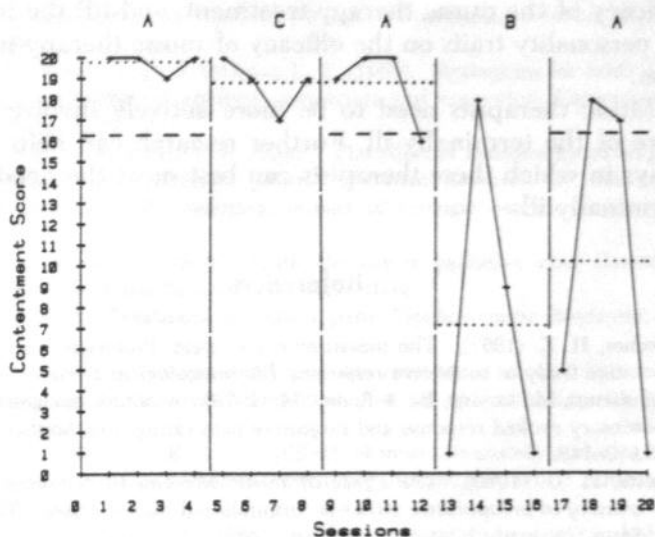
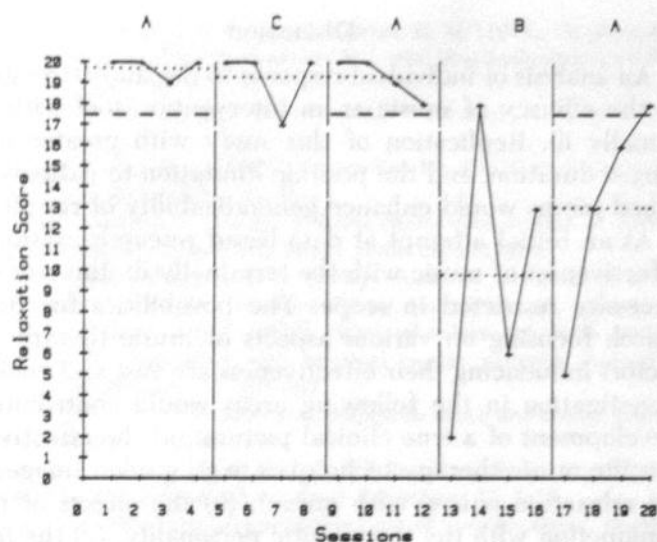


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FIGURE 5.

Pain relief and physical comfort scores of Subject 6 under all conditions.



..... Mean

--- Mean of Total No Intervention Conditions

FIGURE 6.

Relaxation and contentment scores of Subject 6 under all conditions.

Discussion

An analysis of individual response to the study strongly points to the efficacy of music as an intervention tool with the terminally ill. Replication of this study with greater numbers, longer duration, and the possible limitation to patients in 1- or 2-bed rooms would enhance generalizability of results.

As an initial attempt at data-based research examining the effectiveness of music with the terminally ill, this study was of necessity restricted in scope. The possibilities for future research focusing on various aspects of music therapy and the factors influencing their effectiveness are vast and challenging. Investigation in the following areas would contribute to the development of a true clinical picture: (a) the effectiveness of specific music therapy techniques (e.g., guided imagery, muscle relaxation paired with music); (b) the effects of music in conjunction with the therapeutic personality; (c) the influence of the patients' perception of the status of their lives on the efficacy of the music therapy treatment; and (d) the influence of personality traits on the efficacy of music therapy intervention.

Music therapists need to be more actively involved in the care of the terminally ill. Further research can help identify ways in which these therapists can best meet the needs of the terminally ill.

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