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The Influence of Background Music on Task Engagement in Frail, Older Persons in Residential Care

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The purpose of this study was to examine the effects of preferred background music on the engagement of residents of a nursing care facility in therapeutic recreation tasks. Eighteen subjects were assigned to one of two groups and both groups participated in a series of 12 weekly sessions in which the background conditions were randomly ordered. All subjects experienced four sessions each of 10 minutes of (a) silence, (b) preferred background music, and (c) nonpreferred background music. Videotapes were made of all sessions and an observer recorded the number of 30-second time intervals in which each subject was on task. A one-way analysis of variance calculated for frequencies of time intervals for the three conditions revealed no statistically significant differences. It was noted, however, that the therapist tended to prompt more conversations during the preferred music, and when subjects responded they generally dropped their task participation. The investigators concluded that background music may influence the therapists' behaviors which may, in turn, influence responses of their program participants. Further study of the effects of background music on task engagement among care home residents is recommended.

Need and Background for the Study

Residential care facilities for older adults are mandated by state and federal laws to provide quality of life programs for their residents that go beyond meeting physical needs for care and safety. More specifically these facilities must, ". . . promote care for residents in a manner and in an environment that maintains or enhances each resident's dignity and respect in full recognition of his or her individuality" (Federal Register, Vol. 56, No. 187, 483.1 (a), 1991). These facilities must provide quality of life programs to remain certified by the Health Care Finance Administration (HCFA) for Medicare/Medicaid reimbursements. Similar to those in many states, the Kansas State Adult Care Home Regulations specify that residential facilities must promote care that maintains or enhances dignity while respecting and recognizing each resident's individuality (28-30-153. Quality of life, (a) Dignity, p. 25). These same regulations mandate that the facility must provide ongoing programs of activities which meet the interest of and promote the physical, mental, and psychosocial well-being of each resident (28-39-153. Quality of life (e) (1), p. 25). In addition, the Nursing Home Care Units in Veterans Affairs Medical Centers are mandated by the Joint Commission on the Accreditation of Healthcare Organizations (see Joint Commission on the Accreditation of Health Care Organizations, 1994, *Accreditation Manual for Longterm Care,* Vol. 1, Standards, PC. 11.2, p. 51) to provide activities which maintain community identity and a sense of belonging. This is accomplished through activities inside and outside the facility, but there must be involvement inside the facility for those residents who are unable to leave the facility.

Even with such regulations, there is a dearth of information concerning appropriate, feasible programs which can be incorporated into residential care facilities' mandated program requirements. Existing information is comprised generally of anecdotal reports of individual person's responses and descriptions of what seems effective. Often, background music is used by many caregivers who provide programming for those in residential care. There is little to no empirical information concerning the efficacy and viability of specifically designed programs which have as their objectives the maintenance or improvement of life quality in the nursing care home residents. In addition, there is no empirical evidence that

music has any effect on the participation of residents in those programs.

While is it clear that life quality is so important that it is stipulated by the Health Care Finance Administration (HCFA) and, subsequently, by state regulations for adult care homes, the means to provide life quality is left to those who provide care in the various facilities. Therefore, life quality may vary in its definition according to the setting, and according to the condition and needs of the person for whom it is intended. One indication of life quality in residential care is the engagement of individuals in purposeful activity that is meaningful to them. This activity can take many forms, but it is likely most appropriate when it meets the psychological, social, and physical functioning skill levels of the persons for whom it is intended. It must also be appropriate to persons' preferences for activity, in order for them to make a commitment to involve themselves in it. Several music therapists have argued that music has the potential to provide for life quality in these ways (Brotons & Prickett-Cooper, 1994, 1996; Clair & Bernstein, 1990a, 1990b; Clair, Bernstein, & Johnson, 1995; Groene, 1993; Groene, Zapchenk, Marble, & Kantar, 1998; Hanson, Gfeller, Woodworth, Swanson, & Garand, 1996).

A second indication of life quality is engagement with others, but this is only appropriate when the individual wants to be with, and belong with, other persons. Again, music therapy is effective in providing facilitating engagement between persons (Clair & Ebberts, 1997). Provided social engagement is desirable, there may be few opportunities for it in the nursing home care unit. Therefore, these opportunities to interact verbally and nonverbally must be provided through therapeutic interventions. Such interaction may or may not be facilitated, or enhanced, through the use of music in the background.

Both involvement in purposeful, meaningful activities, and opportunities for social interaction, among other therapeutic outcomes, are provided through therapeutic recreation and music therapy programming on the nursing home care unit at a Veterans Affairs Medical Center (VAMC) in the midwest. One context in which these occur is the therapeutic recreation "Toys for Tots" program in which residents who are interested in making toys for young children work together to accomplish their tasks.

The "Toys for Tots" program is ongoing and is designed and directed by a certified therapeutic recreation specialist who, in consultation with music therapists, uses background music during group sessions. A search of the literature revealed that the effects of background music to influence behaviors in older persons are mixed (Clair & Bernstein, 1994; Thomas, Heitman, & Alexander, 1997). In addition, several studies have indicated changes in physiological responses to music in other populations (Dainow, 1977; Davis & Thaut, 1989; Iwanaga, Ideda, & Iwaki, 1996; Jellison, 1975; Landreth & Landreth, 1974; Scartelli, 1984; Scartelli & Borling, 1986; Standley, 1986; Thaut & Davis, 1993). Observations of the elderly participants in the "Toys for Tots" program has shown, however, that background music seems to influence the amount of participation. This background music is characterized by music which is played at a loudness level that is audible while allowing conversation in a normal tone of voice. It is further defined as music which is heard while persons are engaged primarily in some task other than music listening, and it functions to break monotony, establish a mood, provide relaxation, or for any other function individuals find desirable (Radocy & Boyle, 1988, p. 272). The tasks for this participation included toy assembly, hand sanding wood, and painting. Residents in long term care at the VAMC prior to this study demonstrated more or less participation while involved in these activities depending on (a) whether nor not music was played in the background, and (b) whether the music was preferred or not preferred. Researchers have regarded preference as an influential factor in participation by persons who are elderly (Brotons & Prickett-Cooper, 1994; Hanson et al., 1996; Moore, Staum, & Brotons, 1992). Further research has shown music conditions are preferred to nonmusic conditions as indicated by durations of participation in older persons who have dementia (Groene, 1993; Olderog-Millard & Smith, 1989). Therefore, music preference was considered an important factor in this study, and observations of one group of five residents revealed that preferred music of Nat King Cole, Anne Murray, and selected others was effective in stimulating engagement in activities. Also, when classical music or music designed for relaxation was used, these same residents expressed dissatisfaction with the music, and tended to be less active in the structured tasks in the session. Based on these preliminary findings, it is possible

that the type of music can influence participation durations of persons involved in therapeutic recreation interventions.

While observations of participation given the context of background music at the VAMC may provide some indications of therapeutic outcomes, there is a need for empirical research to indicate the viability and efficacy of using music as an influence on adherence to task performance.

The purpose of this study was to determine the effect of music on the duration of on-task engagement among care home residents in a therapeutic recreation program. This study was designed to answer the following research question: Does preferred music, nonpreferred music, or silence influence the amount of on-task engagement for group members?

Method

The protocol for the structured tasks in therapeutic recreation was developed and pilot tested with a group of five residents on the nursing home care unit at a VAMC in the midwest. This protocol involved assembling with screwdrivers precut and bored wooden toys that included rocking horses and turtle step stools, hand sanding the wood, and brush painting the assembled toy. While each of these tasks is simple and repetitious, attention and effort are required over time for successful accomplishment. The repetitious nature of these tasks provides opportunities for success, but it can also lead to tedium. The inclusion of background music may serve to facilitate engagement in task participation to complete the project.

Subjects

In order to answer the research question for this study, a total of 25 recently admitted, male residents on the nursing home care unit at the VAMC were invited to volunteer to participate in a "Toys for Tots" group one day each week for 45 minutes over a period of 12 weeks. Of these invited participants, 18 male residents served as subjects for the study. They ranged in age from 68 to 81 years, and were physically frail enough to qualify for residential care. None of the 18 had previously participated in the group and all were included on the basis of their physical functional abilities and their willingness to participate. The residents were randomly assigned to one of two "Toys for Tots" work groups.

Procedure

Each resident, or his guardian if he did not have power of attorney, was asked to give informed consent (a) to participate as a subject in the project, (b) to have videotapes made of all sessions, (c) to use the videotapes for data collection, and (d) to use the videotapes for educational purposes with students, professionals, and the public. Subjects for whom permission was given for videotaped participation, but denied for using videotapes for educational purposes outside the project, were included in the study. Their videos were not shown, however, to anyone other than the observer who collected the data for the project.

Upon agreement to volunteer as a participant, but before the study began, each subject was asked to indicate his most and least preferred music by completing a preference survey. The music used in determining subjects' preferences included a broad sampling of music in various genres including, country and western, rock, blues, classical, and jazz among others. The music performers for the music categories were derived from survey input gathered from a panel of experts including professors, instructors, and students in music education and music therapy at a university in the midwest. Music of most frequently listed performers for each category was selected for inclusion in a sample music tape to determine musical preferences for this study.

To construct the sample music tape, a 20-second segment of each of 30 selections was recorded with a time interval following each selection that allowed subjects to respond. The sample tape was played by one of the investigators for each subject individually prior to his participation in the group. The investigator asked the subject to rate each selection using a four-point scale (best liked to least liked). Figure 1 lists the selections in the order presented to determine subjects' musical preferences.

To assure that subjects understood the task, they were asked to point to a response sheet upon which faces appeared from the best liked to the least liked while they listened to the selections. The investigator recorded the score associated with the face to which they pointed for each selection. The faces were enlarged on a $8.5'' \times 11''$ page to assure adequate visibility. For one of the subjects with severe visual impairment, the faces were replaced by four disks of sandpaper in four grades from very fine to very coarse. The finest

Perry Como	It's Impossible
Bab Marley	Buffalo Soldier
Peter, Paul, & Mary	Lemon Tree
Michael Bolton	When a Man Love a Woman
Led Zeppelin	Black Dog
Glen Miller	In the Mood
Patsy Cline	Walkin' after Midnight
Yanni	Santorini
Janet Jackson	Rhythm Nation
Beethoven	Symphony No. 1
George Winston	The Holly and the Ivy
Willie Nelson	Mammas Don't Let Your Babies Grow Up to be Cowboys
Enya	Watermark
Kenny G	Silhouette
Buddy Holly	Peggy Sue
Eagles	Take it Easy
Harry Connick, Jr.	Blue Skies
Bob Dylan	Mr. Tambourine Man
Drifters	Stand by Me
Whitney Houston	I Will Always Love You
Elvis	Heartbreak Hotel
The Judds	Turn it Lose
Nat King Cole	Unforgettable
The Beatles	Michelle
Garth Brooks	Wild Horses
Miles Davis	Freddie Freeloader
Kathleen Battle	Tancredi
Woody Guthrie	House of the Rising Sun
Ella Fitzgerald	Begin the Beguine
Pavarotti	'O Sole Mio!

FIGURE 1.
Music preference samples in order of presentation.

and smoothest grade of sandpaper represented the best liked and most listened to music, while the most coarse grade represented least liked and never listened to music.

Total scores were computed for all selections. Those with the highest (most preferred) and those with the lowest (least preferred) scores were chosen for inclusion in the study. The most preferred music used on one experimental background tape included: "In the Mood," Glen Miller, "Walkin' after Midnight," Patsy Cline, "I Will Always Love You," Whitney Houston, "Blue Skies," Harry Connick, Jr., and "Unforgettable," Nat King Cole. The least preferred music used on the other experimental background tape

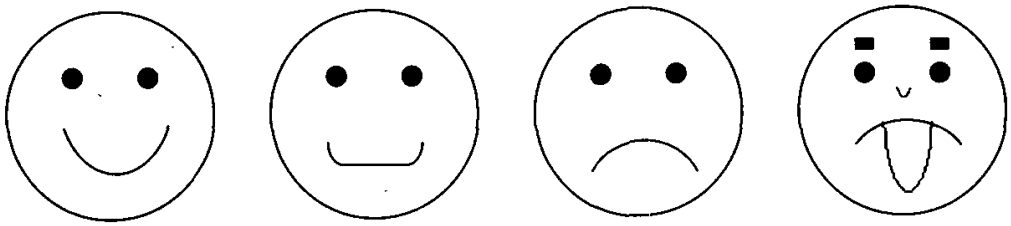

FIGURE 2.
Face indications for music preference judgments.

included: "Stanchen," Leontyne Price, "Cantate Con Me," Luciano Pavarotti, "Ch'io Mi Scordi Di Te," Kathleen Battle, and selections from "Symphony No. 1 and Symphony No. 2," by Beethoven.

After assessing the music preference for the subjects, two groups of five to six residents each met for 45 minutes once weekly for 12 weeks. The study was nested into the scheduled program to avoid any disruption in care plans. Therefore, as individuals were discharged from the medical center, other newly admitted residents took their places as subjects. After their music preferences were determined, these new group members were incorporated as subjects into the groups until a total of 18 subjects had participated in the study. New subjects' preferences were assessed according to the procedure used when the study was initiated. Residents whose preferences differed from those of the group's majority were not included as subjects; and, while these persons may have participated in the activities, no data were collected for them. Therefore, data were collected only for subjects who expressed preferences that were consistently in agreement.

The inclusion of new group participants and discharges of participants from the unit into the community was natural to the setting. All participants were familiar with the process, and all new participants were residents on the unit for at least 2 weeks before they joined a "Toys for Tots" group. Two weeks were considered long enough to gain familiarity among new and previous residents, and to adjust to the structure and routine of the unit. Consequently, all participants were familiar with one another prior to their initiation into the groups' activities, and changes in the group

composition had no apparent effect on participation. Observations of subjects' participation levels did not reveal any noticeable alterations that were associated with changes in group composition. In addition, participation in the group did not require time to develop since all tasks were in the subjects' repertoire and subjects required no training to reach full engagement in the tasks.

Each group session was videotaped for later review and data collection. In each session subjects either heard (a) best liked, or preferred background music, (b) least liked, or nonpreferred background music, or (c) heard no music at all. For each of the background music types, the loudness level was set so that the music was audible, but did not interfere with the normal tone of voice used in conversation. Each of the three conditions occurred for four sessions that were ordered randomly until each subject participated in a total of 12 research sessions. Participants in the groups remained as subjects in the study only until they completed 12 sessions in which each of the three conditions occurred four times. Once the requisite sessions were completed, subjects were dropped from the data collection but continued in the work groups until discharged, or until the care plan indicated a change in activities. This design allowed some subjects to complete the study and still remain in assigned activities, while others were added to the program after they lived for two weeks on the unit.

To avoid experimenter bias, an observer took data concerning on-task behaviors of subjects in the study. This observer was trained to observe videotapes in order to record frequencies of participation behaviors. This required the observer to watch each tape, and to record a "+" in each 30-second time interval in which behaviors specific to the task occurred. A "–" was recorded in each 30-second time interval in which the behaviors did not occur. Then, the frequency of "+" was summed for later statistical analyses.

After training, the observer was required to evaluate one videotape and to reevaluate the same tape after a period of 2 days. The data from the two sessions were compared to determine the test/retest reliability of the observer's data collection. Reliability was calculated by subtracting the number of intervals in which the test/retest ratings disagreed from the number of intervals in which the ratings agreed, divided by the total number of time intervals in which observations were made. The calculation for the observer resulted in a reliability of .97, which exceeded the criterion level of

.90. To check for observer drift, reliability was calculated again using a videotape from the fourth session. The same test/retest procedure was implemented and the result was $r = .95$ which was sufficient to assure that observer reliability was maintained and retraining was not required.

Data Analyses

For each of the three conditions, (a) preferred music, (b) nonpreferred music, and (c) silence, the numbers of 30-second intervals in which each resident participated with behaviors specific to the task assigned were summed to constitute a frequency count. A one-way analysis of variance was calculated to determine whether there were significant differences among the conditions in the numbers of 30-second intervals for on-task participation.

The one-way analysis of variance for difference in participation levels for the three conditions yielded an F ratio of .0409 with $p = .9601$ which showed no statistically significant difference in the number of time intervals in which subjects were engaged in tasks. This result is not surprising with overall group mean scores of time intervals on task engagement at 17.3434 for silence, 17.3970 for preferred music, and 17.6710 for nonpreferred music conditions.

Discussion

No significant differences in task engagement occurred in this study when the three conditions, (a) silence, (b) best liked, or preferred, background music, and (c) least liked, or nonpreferred background music, were compared. This result may have occurred due to the long duration of this study. Observation of the videotapes showed that the subjects seemed very aware of the music and nonmusic conditions in the initial three or four sessions. In this time frame it was not uncommon for subjects to stop working and ask, "What's that?" when they heard the least preferred music. They often made other comments that reflected their dissatisfaction with this music. As they heard their preferred music, they also often remarked that they "sure liked that song." As the study went on, there were fewer and fewer comments regarding the nonpreferred and the preferred music. Subjects in this study may have ac-