



**AOTA Critically Appraised Topics and Papers Series**  
**Alzheimer's Disease**

*\*A product of the American Occupational Therapy Association's  
Evidence-Based Literature Review Project*

**CRITICALLY APPRAISED PAPER (CAP)**

***Focused Question***

**What is the evidence for the effect of interventions designed to modify and maintain perceptual abilities on the occupational performance of persons with dementia?**

Sherratt, K., Thornton, A., & Hatton, C. (2004). Emotional and behavioural responses to music in people with dementia: An observational study. *Aging and Mental Health*, 8, 233–241.

**PROBLEM STATEMENT (JUSTIFICATION OF THE NEED FOR THE STUDY)**

State the problem the authors are investigating in this study.

As cited in the article, evidence exists on the benefits of music for people with dementia, but the specific variables accounting for these effects are not mentioned. Building on the recommendations of other researchers, the aim of the study was to examine the impact of social interaction on music listening and comparing four types of music.

**RESEARCH OBJECTIVE(S)**

List study objectives.

The research objectives are to determine whether

- Responses to music would be significantly greater during the live music condition compared with the recorded music condition
- Participants would spend significantly more time engaged in meaningful activity during the live music condition compared with the recorded music and no music conditions
- Levels of observed well-being would be significantly higher during the live music condition compared with the recorded music and no music conditions
- Levels of observed individually defined challenging behaviors would be lower during the live music condition compared with the recorded music and no music conditions
- There would be no significant correlations between observable signs of well-being, engagement in meaningful activity, responses to music, challenging behavior, and the scores on the Mini Mental State Examination (MMSE) during the live music condition

Describe how the research objectives address the focused question.

Objective 2 states that participants would spend significantly more time engaged in meaningful activity during the live music condition, compared with the recorded music and no music conditions. Considering live music to be external sensory information, it will be received from the auditory senses and integrated within an individual and result in a purposeful output or meaningful activity.

Objective 5 addresses the impact of the perceptual intervention (music) on well-being and engagement in meaningful activity, which are linked to occupational performance.

**DESIGN TYPE:**

An experimental, within participants, repeated measures design

**Level of Evidence:**

III

Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? *If no, explain.*

Yes

No

**SAMPLE SELECTION**

**Inclusion Criteria**

Consent for inclusion of service users was obtained and where it was not feasible, written assent from relatives/care staff was sought.

- Formal diagnosis of dementia
- Moderate to severe level of cognitive impairment as measured by the MMSE
- History of challenging behavior and/or signs of social withdrawal and minimal engagement

**Exclusion Criteria**

Presence of auditory or visual impairment in excess of that associated with normal aging

Sample Selection Biases: *If yes, explain.*

Volunteers/Referrals

Yes

No

Attention

Yes

No

Others (list and explain):

**SAMPLE CHARACTERISTICS**

N=24

% Dropouts

# (%) Male

# (%) Female

Ethnicity

Disease/disability diagnosis	Participants had a diagnosis of dementia. 7 participants obtained MMSE scores indicating moderate cognitive impairment and 7 obtained scores indicating severe cognitive impairment. One participant obtained a 0 score, indicating very severe cognitive impairment and another 9 were considered to be so severely impaired that they could not be tested.
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NR = Not reported

Check appropriate group:

<20/study group	20–50/study group <input checked="" type="checkbox"/>	51–100/study group	101–149/study group	150–200/study group
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Sample Characteristics Bias: If no, explain.

If there is more than one study group, was there a similarity between the groups?

Yes

No

Were the reasons for the dropouts reported?

Yes

No

**INTERVENTION(S)**—Included are only those interventions relevant to answering the evidence-based question.

*Add groups if necessary*

Group 1

Brief Description	Music preferences among participants were diverse and participants with similar preferences were divided into 5 groups of no more than 8 people. Music selections lasting 1 hour were played on stereo systems. For live performances, a semi-professional sang and played the guitar, using a microphone and amplifier, sitting next to where the stereo equipment was positioned. Responses of participants to no music, commercially recorded music, recorded music by musician, and live music were observed.
Setting	Ward/day unit.
Who Delivered?	Music preferences were played on the stereo and a live musician was also present. An observer was present in the general area where the participant would usually sit or be and would observe participants' responses.
Frequency?	1:1 observation from 10:30 a.m. to 12:30 p.m. and between 1:30 p.m. and 3:30 p.m.
Duration?	4 hours per participant

Intervention Biases: *Explain, if needed.*

Contamination

Yes

No

Co-intervention

Yes

No

Timing

Yes

No

Site

Yes

No

Use of different therapists to provide intervention

Yes

No

**MEASURES AND OUTCOMES**—Included are measures relevant to answering the focused question.

Name of measure:

Using continuous time sampling, non-participant observational data was collected using Psion Workabout hand-held computers using software developed for real-time multiple event recording (McGill, Hewson, & Emerson, 1994)

Outcome(s) measured (what was measured?):

The researcher recorded participant behavior across six dimensions:

- Levels of well-being/ill being
- Level and type of activity
- Physical location
- Response to music
- Interaction with staff of the researcher(s)
- Individually defined challenging behaviors in which the participants might engage (e.g., wandering, shouting)

Is the measure reliable (as reported in article)?

Yes

No

NR

Is the measure valid (as reported in article)?

Yes

No

NR

How frequently was the measure used for each group in the study?

It was used with each participant.

Measurement Biases

Were the evaluators blinded to treatment status? *If no, explain.*

Yes

No  The main author carried out most of the observations.

Recall or memory bias *If yes, explain.*

Yes

No

Others (list and explain):

Limitations (appropriateness of outcomes and measures) *If no, explain.*

Did the measures adequately measure the outcome(s)?

Yes

No

**RESULTS**

List results of outcomes relevant to answering the focused question

Include statistical significance where appropriate ( $p < 0.05$ )

Include effect size if reported

- Recorded and live music appear to be effective. Friedman’s Chi square statistics for no meaningful activity/sleeping:  $\chi^2(3) = 26.650$   $p < 0.01$  and for meaningful:  $\chi^2(3) = 5.0$   $p < 0.5$ .
  - Recorded and live music were effective in increasing levels of well-being/extreme well-being when compared to the no-music condition, and live music was the most effective method. Friedman’s Chi square statistics for well-being/extreme well-being:  $\chi^2(3) = 8.55$   $p < 0.5$  (live music > no music).
  - For well-being,  $\chi^2(3) = 4.25$  and for extreme well-being,  $\chi^2(3) = 14.92$ ,  $p < 0.01$

Was this study adequately powered (large enough to show a difference)? *If no, explain.*

Yes

No

Were appropriate analytic methods used? *If no, explain.*

Yes

No

Were statistics appropriately reported (in written or table format)? *If no, explain.*

Yes

No

## CONCLUSIONS

State the authors' conclusions that are applicable to answering the evidence-based question.

Relevant to the focused question, the authors concluded that engagement in meaningful activity increased most during a live music condition. The finding could be applicable to other groups of people with moderate to severe dementia in formal care. A combination of social interaction and nonverbal activity (live music) allowed participation in meaningful activity whatever the person's level of cognitive ability.

Were the conclusions appropriate for the Study Design (Level of Evidence)? *If no, explain.*

Yes

No

Were the conclusions appropriate for the statistical results? *If no, explain.*

Yes

No

Were the conclusions appropriate given the study limitation and biases? *If no, explain.*

Yes

No

## IMPLICATIONS FOR OCCUPATIONAL THERAPY

This section provides guidance about clinical practice, program development, and other implications of the study findings as they relate to the focused question.

In older adults with dementia, as the disease progresses, the ability to engage in meaningful activity declines. This in turn results in a decrease in occupational performance. Through the use of music in this study, engagement in meaningful activity can be increased. This can be implemented for older adults diagnosed with moderate to severe cognitive impairments who are cared for in nursing homes. By engaging in meaningful activity, a feeling of well-being can result. This in turn will affect the quality of life. Occupational therapists working with older adults with dementia could use music to increase engagement in meaningful activities.

## REFERENCES

McGill, P., Hewson, S. & Emerson, E. (1994). CTS: a software package for the collection of observational data on Psion organisers. Canterbury: CAPSC, University of Kent.

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For more information about the Evidence-Based Literature Review Project, contact the American Occupational Therapy Association, 301-652-6811, x 2052.



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