G Ital Med Lav Erg 2022; 44:3, 398-402
ISSN 1592-7830

Alfredo Raglio[1], Roberta Pelizza[2], Camilla Figini[2], Alice Bencivenni[2]

Background Music in elderly nursing home: a feasibility explorative study

[1] Laboratorio di Ricerca in Musicoterapia, Istituti Clinici Scientifici Maugeri IRCCS, Pavia, Italy
[2] Villa Flavia, Cooperativa Il Gabbiano 2.0, Varese, Italy

ABSTRACT. **Introduction.** ***This study explores how a background music-listening program within residential facilities for the elderly can influence the general environment and be effective on psychological and behavioral aspects. The feasibility of this type of intervention was explored.***
Methods and Materials. ***Twenty-nine residents involved in the experiment were observed for 4 weeks in absence of a music intervention and for the same period during the experimental condition. The intervention consisted in music listening programs, designed by trained music therapists for specific objectives according to the different times of the day. Experimental and control condition effects were compared through the administration of clinical scales and observational grids.***
Results. ***The results of clinical scales showed that music listening programs reduced behavioral symptoms in 7 out of 8 people with the most severe neuropsychiatric symptoms. The observational scheme completion showed a clear improvement in all outcomes considered, with the exceptions of agitation (in the morning) and irritability (in the afternoon).***
Discussion. ***The study brings several points to attention, including the need to establish a set of criteria in music listening programs selection and administration (e.g. identification of music characteristics related to objectives and outcomes, assessment strategies, involvement of a team of professionals). Implementing evidence-based clinical practice is crucial and the highlighted results encourage the introduction of music-listening approaches as part of therapeutic interventions in elderly nursing homes.***

Key words: *music listening, music therapy, background music, evidence-based intervention, well-being, cognitive disorders, behavioral and psychological symptoms.*

RIASSUNTO. ***Introduzione.*** **Questo studio di fattibilità ha valutato come un programma di ascolto di musica ambientale all'interno di strutture residenziali per anziani possa influenzare l'atmosfera generale ed agire sugli aspetti psicologici e comportamentali.**
Metodi e materiali. **I ventinove residenti coinvolti nell'esperimento sono stati osservati per 4 settimane in assenza di un intervento musicale e per lo stesso periodo durante la condizione sperimentale. L'intervento consisteva nell'ascolto di playlist musicali, ideate da musicoterapeuti formati per raggiungere obiettivi specifici a seconda dei diversi momenti della giornata. Gli effetti delle condizioni sperimentali e di controllo sono stati confrontati attraverso la somministrazione di scale cliniche e griglie osservazionali.**
Risultati. **Dai risultati delle scale cliniche è stato mostrato come i programmi di ascolto musicale abbiano ridotto i sintomi comportamentali in 7 persone delle 8 che**

Introduction

Music activities can be considered as powerful interventions used in the geriatric field to promote communicative, relational processes and emotional expression (1). The effectiveness of music-based interventions on behavioral and psychological symptoms of dementia have been highlighted by several previous studies (2-5). Therefore, especially in pathological aging, the use of music is very widespread in psycho-social interventions. A first broad distinction occurs between actual music therapy interventions (active or receptive techniques that require the presence of a trained music therapist, a setting, a theoretical background and a specific assessment) and other music-based activities such as general music activities (singing, music listening, etc.) guided by other professionals (staff, formal and informal caregivers, etc.) and supervised by a music therapist (6-8). Among general music activities, listening to preferred music is one of the most employed interventions with elderly to improve well-being and to reduce eventual maladaptive behaviors. The results of a review of the most recent RCTs testing (9) about music listening intervention showed potential benefits on behavioral disturbances. Clear guidelines are required to fully exploit the potential of individualized music listening (10-15), including the definition of specific criteria to select and administer listening programs; moreover, the involvement of trained music therapists could be to identify specific music contents and therapeutic objectives. In addition to individualized music listening, background music intervention can be used to improve the environment in a more global way. Pre-recorded musical programs are created according to specific objectives, offered to different types of people in specific contexts (such as lunchtime, personal care procedures, moments of rest etc.) (16). This type of intervention is often designed for the hospital or nursing home contexts, to promote general well-being and to improve persons' adaptation to the environment. Several studies highlight beneficial effects of background music in reducing agitation and negative social behaviors (17-18), in enhancing cognitive tasks related to verbal fluency and memory (19), in increasing cooperation and improving the relationship during nursing activities and stimulating positive emo-

presentavano i sintomi neuropsichiatrici più severi. La compilazione delle schede osservazionali ha mostrato un netto miglioramento di tutti gli aspetti considerati, ad eccezione di agitazione (al mattino) e irritabilità (al pomeriggio).
***Discussione*. Lo studio porta all'attenzione diversi punti, tra cui la necessità di stabilire una serie di criteri nella selezione e proposta dei programmi di ascolto musicale, tramite l'identificazione delle caratteristiche musicali in base a obiettivi e risultati, la scelta di strategie di valutazione, il coinvolgimento dei caregivers. L'implementazione della pratica clinica basata sull'evidenza è fondamentale e i risultati emersi incoraggiano l'introduzione di approcci basati sull'ascolto musicale come parte degli interventi terapeutici nelle strutture residenziali per anziani.**

Parole chiave: ascolto musicale, musicoterapia, musica ambientale, approcci evidence-based, benessere, disturbi cognitivi, sintomi comportamentali e psicologici.

tions and moods (20-23). An attempt to apply systematically a music listening program during lunchtime was made in a residential center for elderly people (24), with a quasi-experimental design lasting two months: a week with a musical program was alternated to a week without intervention. The results indicate that music programs can improve negative behaviors. Keeping this evidence in mind, the present study proposes a structured listening program within the residential center for the elderly "Villa Flavia" (Pavia, Italy). The main hypothesis is that structured moments of daily music listening can affect general well-being, by improving general quality of life and reducing maladaptive behaviors among the residents.

Materials and Methods

This research adopted a longitudinal (short-term) design, in which single group changes were recorded along a two-month period. The study was conducted in an institution housing autonomous old residents, most of which presented a clinical frame of cognitive decline. Twenty-nine residents involved in the experience were observed for a period of 4 weeks without music stimuli and for the same amount of time during the experimental condition. The experimental condition consisted in specific music listening programs, designed by trained music therapists to accompany different times of the day. Four moments of daily life were identified for the music listening programs; these were chosen in accordance with daily activities of the residential structures and were characterized by absence of other stimuli. The music therapists created 4 different playlists (1 hour each), each one for a different purpose (relaxation or activation). The playlists were broadcast in the common areas of the structure, where residents generally gather. Health staff was instructed to set the beginning of music listening autonomously, using Mp3 players, connected to Bluetooth speakers.

The main hypothesis was to improve the general well-being of the guests, through different musical listening programs designed for specific objectives and according to the time of day. In particular, the main objectives were a) sensory activation and stimulation (at the beginning of the morning and after the postprandial rest); b) socialization (after morning physiotherapy); c) deactivation and facilitation of night rest (after dinner and during preparation for the night). For activating playlists created for stimulation, music was mainly classical and with a positive valence, and had a growing trend, starting from slow tempos such as the *adagios* and then moving on to progressively faster tempos (from *andante*, to *allegro* and *presto* or *vivace* tempos) (a). For the listening program designed to promote socialization, songs familiar to the target population have been introduced to facilitate reminiscence and memory and, consequently, to encourage a common experience that could be shared with others (b). Finally, for the last relaxing playlist, a succession of tracks was created with a regular and calm rhythmic trend, a slow tempo, regular pulsations, a continuous sound without abrupt interruptions, slow melodies, simple harmonies, and constant volumes, favouring the timbre of strings such as the lute and the guitar (c).

All subjects had the possibility, according to their will, to undergo the listening program, which took place at specific times during the day in the living rooms of the two main housing units. The sample characteristics and the setting didn't allow a rigorous research method, for logistic reasons. However, methodological choices were adopted to observe differences between the control and the experimental condition. Twenty-nine residents initially underwent the evaluations and their overall cognitive profile was assessed using the Mini Mental State Examination tool (Folstein et al., 1975.), leading to a sample division into three groups according to the level of impairment, from mild to severe. Furthermore, the NeuroPsychiatric Inventory (Cummings et al., 1994) was administered to evaluate the severity of Behavioral and Psychological Symptoms of Dementia (BPSD).

The evaluation tools adopted during the assessment periods included psychological scales to investigate anxiety and depression symptoms (HADS, Hospital Anxiety Depression Scale, Bjelland et al., 2002), quality of life (The Cornell-Brown Scale for Quality of Life in dementia, CBS-QOL, Ready e Ott, 2008) and neuropsychiatric symptoms evolution (NPI, Cummings et al., 1994). The study design scheduled four different moments of assessment: a first baseline evaluation (T0); another evaluation at the end of the 4-weeks control condition (T1); a third assessment at the end of the experimental condition (T2) and finally a follow-up assessment (T3).

Alongside these evaluations an observational scheme, created ad hoc by the researchers, was filled out by formal caregivers of the residence; this scheme aimed at assessing behavioral disturbances such as anxiety, aggressivity, apathy, agitation, mood deflection, irritability, and physical or verbal aggressivity. Different members of the health staff made the observations twice a day (after the morning and after the afternoon), depending on the presences on each day. Each item was assigned a score from 0 to 1 (0 = absent; 0,5 = partially present; 1 = present). Qualitative analysis of data of the study is presented in the following section.

Results

Demographic and clinical characteristics of the residents involved in the study are summarized in Table I.

Unfortunately, for pandemic-related and clinical reasons, it was not possible to complete the assessments, especially for evaluations at T1 and T3. The more relevant result of the study assessed by clinical scales was that music listening programs reduced behavioral symptoms in 7 of 8 people with higher NPI global scores. Details of these improvements are reported in Figure 1.

The evaluations made using the observational scheme showed a clear improvement in all outcomes considered both in the morning and in the afternoon, with the exceptions of agitation (in the morning) and irritability (in the afternoon). Results concerning the observational scheme are reported in Figures 2 and 3.

Table I. *Demographic and clinical variables of the participants at baseline (n=29)*

Variables	*n*	*%*	*Mean*	*SD*	*Range*
Age			88	5,7	76-96
Gender					
Male	4	13,8			
Female	25	86,2			
Education			5	2,4	
Medical Diagnosis					
Cognitive impairments	6	20,68			
Behavioral disorders	8	27,58			
Psychiatric diagnosis/symptoms	3	10,34			
Other neurological conditions	4	13,8			
MMSE					
Severe dementia (0-9/30)	3	10,34			
Moderate dementia (10-20/30)	9	31,03			
Mild dementia (21-24/30)	9	31,03			
NPI (>=12/144)	8	27,58			

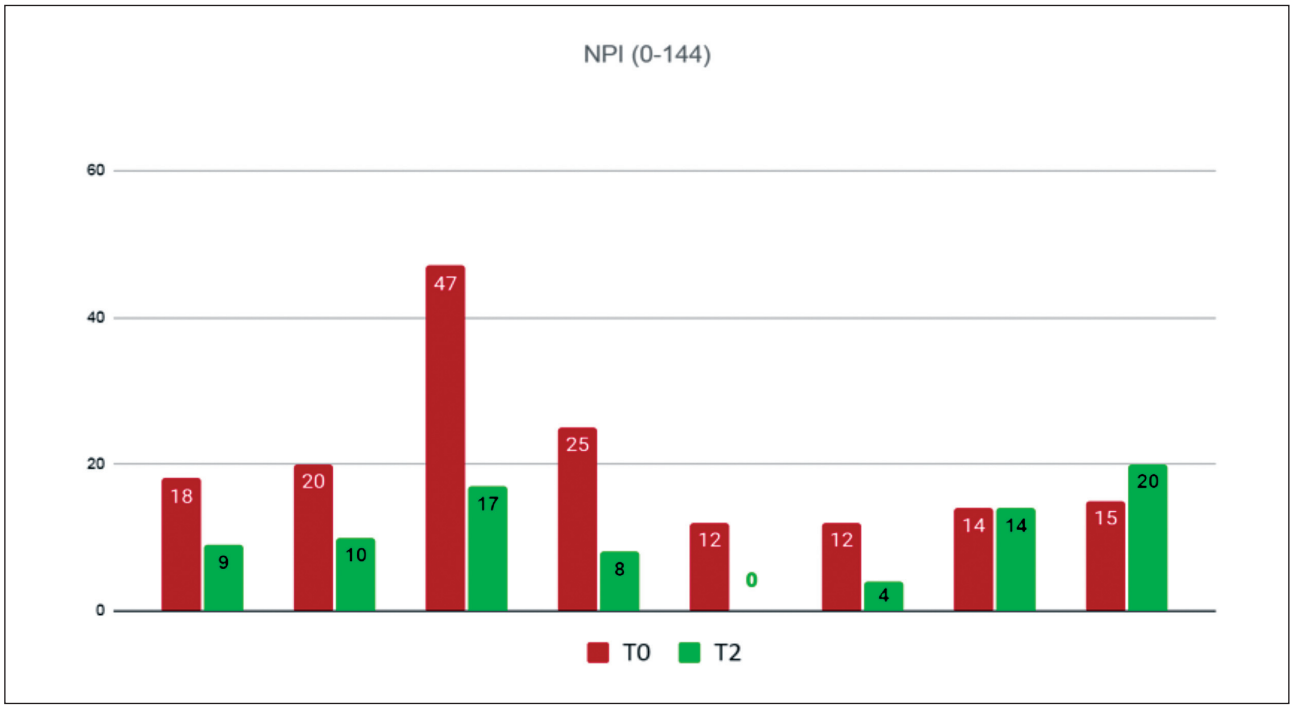

Figure 1. *T0 vs T2 NPI global scores regarding residents with more relevant neuropsychiatric conditions (n=8)*

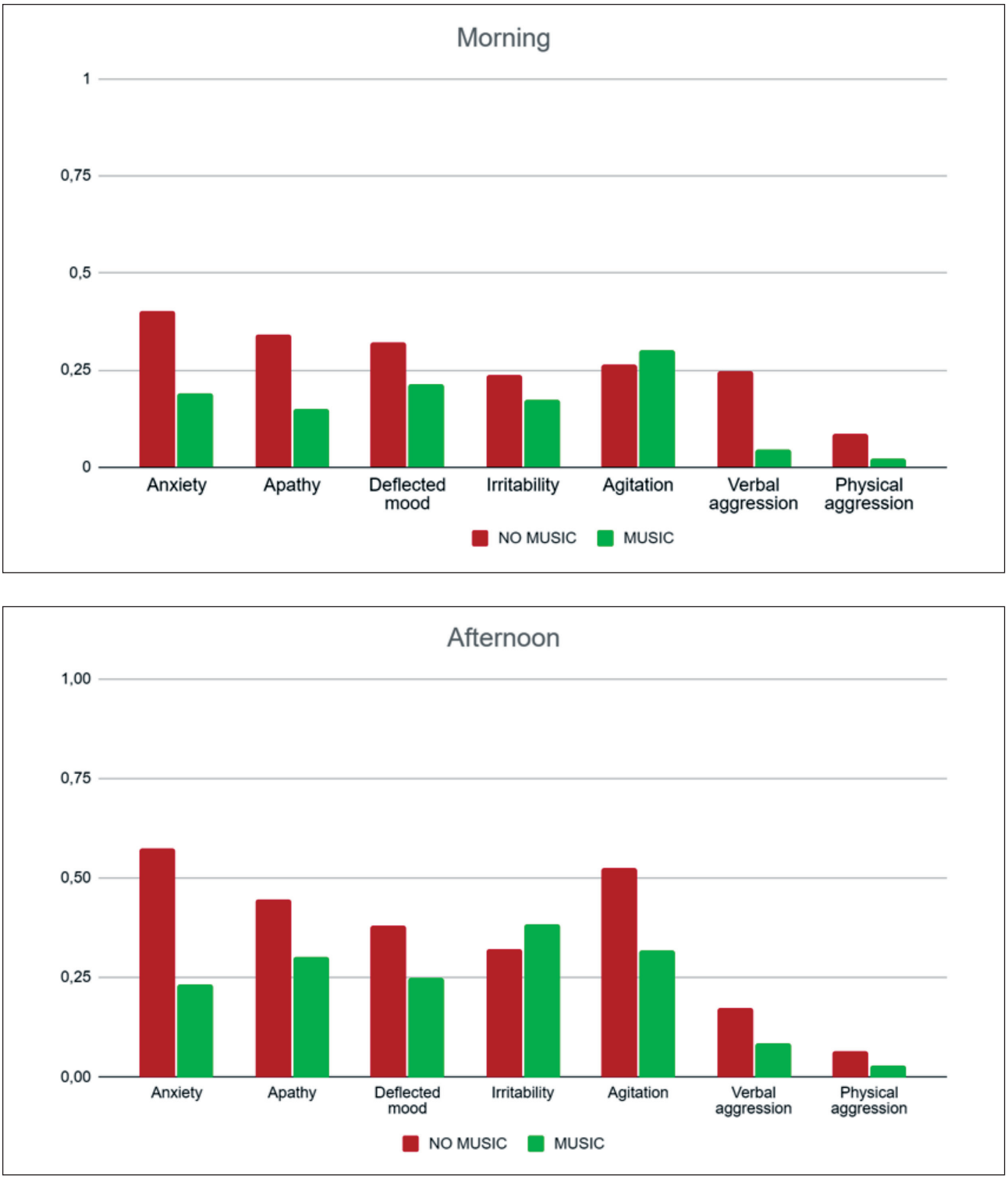

Figure 2. ***Behavioral disturbances observed in the morning and afternoon using the observational scheme. Comparison between the two conditions (with music and without music). Mean scores for all subjects (0 = absent; 0,5 = partially present; 1 = present)***

Discussion

The present research suggests that also background music listening can help to improve behavioral disturbances in elderly population. This encourages the use of techniques using music that can be integrated with conventional care. As suggested by literature (1) these techniques, such as background music, can constitute a model of intervention that includes the music therapy approach as well as a more general use of music. However, such use that may involve (as in the case of this study) formal caregivers, requires the supervision of a music therapist.

The strength of this study is the specificity of the intervention, especially in the study design and in the rationale (music and times of listening choices). The musical

habits of the residents were taken into consideration. All pieces were accurately chosen, examining their specific parameters, and more specific analysis of the pieces characteristics that would directly act specifically on the activation and deactivation states was made. The order of tracks in each playlist was decided according to those specific purposes. Also, to stimulate socialization the most well-known and appreciated songs were proposed.

The main limitation of the study was the impossibility to complete the assessment that was initially designed, leading to a qualitative analysis of the data. The difficulties encountered with this specific population suggest it would be advisable to complete the assessment with more direct observations, such as video recordings. Another call is the need to train adequately the staff involved, in order to obtain a more coherent and uniform application and evaluation of the protocol.

More studies overcoming previous mentioned limitations are needed to strengthen these preliminary results that confirm the positive valence of adequately selected background music. The encouraging results presented here can serve as a reference to introduce this approach as part of therapeutic interventions in elderly nursing homes.

References

1) Raglio, A., Filippi, S., Bellandi, D., & Stramba-Badiale, M. (2014). Global music approach to persons with dementia: evidence and practice. Clinical interventions in aging, 9, 1669.
2) Särkämö T, Tervaniemi M, Laitinen S, Numminen A, Kurki M, Johnson JK, Rantanen P. Cognitive, emotional, and social benefits of regular musical activities in early dementia: randomized controlled study. Gerontologist. 2014 Aug;54(4):634-50. doi: 10.1093/geront/gnt100. Epub 2013 Sep 5.
3) Raglio A, Bellelli G, Traficante D, et al. Efficacy of music therapy in the treatment of behavioral and psychiatric symptoms of dementia. Alzheimer Dis Assoc Disord. 2008;22(2):158-162.
4) Ueda T, Suzukamo Y, Sato M, Izumi SI. Effects of music therapy on behavioral and psychological symptoms of dementia: a systematic review and meta-analysis. Ageing Res Rev. 2013;12(2):628-64.
5) Vasionytė, I., & Madison, G. (2013). Musical intervention for patients with dementia: a meta-analysis. Journal of clinical nursing, 22(9-10), 1203-1216.
6) Raglio, A., & Gianelli, M. V. (2009). Music therapy for individuals with dementia: areas of interventions and research perspectives. Current Alzheimer Research, 6(3), 293-301.
7) Raglio, A., Bellelli, G., Mazzola, P., Bellandi, D., Giovagnoli, A. R., Farina, E., ... & Trabucchi, M. (2012). Music, music therapy and dementia: a review of literature and the recommendations of the Italian Psychogeriatric Association. Maturitas, 72(4), 305-310.
8) Van der Steen, J. T., Smaling, H. J., Van der Wouden, J. C., Bruinsma, M. S., Scholten, R. J., & Vink, A. C. (2018). Music-based therapeutic interventions for people with dementia. Cochrane Database of Systematic Reviews, (7).
9) Raglio, A. Bai, S. Figini, C. Manera, M. Imbriani, C. Fundarò, C. Buonocore, M. (2022) Music listening for people living with dementia: a systematic review. G Ital Med Lav Erg 2022; 44:1, 84-92.
10) Gerdner, L.A. (2000). Effects of individualized versus classical "relaxation" music on the frequency of agitation in elderly persons with Alzheimer's disease and related disorders. International Psychogeriatrics, 12(1), 49-65. http://doi.org/10.1017/S1041610200006190.
11) Gerdner, L.A. (2005). Use of individualized music by trained staff and family: translating research into practice. http://doi.org/10.3928/0098-9134-20050601-08.
12) Gerdner, L.A. (2012). Individualized music for dementia: Evolution and application of evidence-based protocol. World journal of psychiatry, 2(2), 26. http://doi.org/10.5498/wjp.v2.i2.26.
13) Gerdner, L.A., & Schoenfelder, D.P. (2010). Evidence-based guideline. Individualized music for elders with dementia. Journal of gerontological nursing, 36(6), 7-15. http://doi.org/10.3928/00989134-20100504-01
14) Raglio, A., Bellandi, D., Baiardi, P., Gianotti, M., Ubezio, M. C., Zanacchi, E., ... & Stramba-Badiale, M. (2015). Effect of active music therapy and individualized listening to music on dementia: a multicenter randomized controlled trial. Journal of the American Geriatrics Society, 63(8), 1534-1539.
15) Raglio, A., & Oasi, O. (2015). Music and health: what interventions for what results? Frontiers in psychology, 6, 230.
16) Shih, Y. N., Huang, R. H., & Chiang, H. Y. (2012). Background music: Effects on attention performance. Work, 42(4), 573-578.
17) Ziv N, Granot A, Ha IS, Dassa A, Haimov I. The effect of background stimulative music on behavior in Alzheimer's patients. J Music Ther. 2007;44(4):329-343
18) Dunn KS, Riley-Doucet CK. Comparative analysis of two musical genres within a multisensory environmental intervention. J Holist Nurs. 2013;31(1):62-701669.
19) Bottiroli, S., Rosi, A., Russo, R., Vecchi, T., & Cavallini, E. (2014). The cognitive effects of listening to background music on older adults: processing speed improves with upbeat music, while memory seems to benefit from both upbeat and downbeat music. Frontiers in aging neuroscience, 6, 284.
20) Götell E, Brown S, Ekman SL. Caregiver singing and background music in dementia care. West J Nurs Res. 2002;24(2):195–216.
21) Götell E, Brown S, Ekman SL. Influence of caregiver singing and background music on posture, movement and sensory awareness in dementia care. Int Psychogeriatr. 2003;15(4):411-430.
22) Götell E, Brown S, Ekman SL. The influence of caregiver singing and background music on vocally expressed emotions and moods in dementia care: a qualitative analysis. Int J Nurs Stud. 2009;46(4): 422-430.
23) Ragneskog H, Brane G, Karlsson I, Kihlgren M. Influence of dinner music on food intake and symptoms common in dementia. Scand J Caring Sci. 1996;10(1):11-17
24) Chang FY, Huang HC, Lin KC, Lin LC. The effect of a music programme during lunchtime on the problem behaviour of the older residents with dementia at an institution in Taiwan. J Clin Nurs. 2010;19(7-8):939-948.

Correspondence: *Dr. Raglio Alfredo, Ph.D., Istituti Clinici Scientifici Maugeri IRCCS, Music Therapy Research Laboratory, Scientific Institute of Pavia, Via Muageri, Pavia 27100, Italy, Phone/Fax: +390382593797, alfredo.raglio@icsmaugeri.it*