

MUSIC THERAPY IN DEMENTIA

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(Psycho-Social Intervention in Dementia)

ABSTRACT

The article aims at a possible definition of music therapy and underlines the principal differences between the generic and the therapeutic use of music in the field of dementia. The article begins with a brief review about the most recent studies in the international literature, followed by the presentation of the reasons of the efficacy of the music therapeutic approach in the persons living with Alzheimer's disease or with dementia. In addition, the article describes a music therapy approach based on the free sonorous-music improvisation and on the psychological intersubjective perspective. In conclusion, you can read the description of some research studies realized with rigorous methodological criteria (scientific approach), and in Appendix 1 a case report regarding music therapeutic treatment of a person with a diagnosis of mixed dementia of mild level (clinical approach).

Keywords: Music – music therapy –dementia – evidence based practice – scientific approach.

INTRODUCTION

The use of music and sonorous-music elements in the field of dementia has been, for some years, much widespread, although the application experiences are very different in relation to the purposes and contents of the proposals. The contexts in which musical activities are proposed to people with dementia are numerous. Their main goal is to create a situation of wellbeing and socialization through various music proposals (rhythmic use of instruments, singing, movement associated with music, etc.). There are also the experiences of listening to music: music is potentially evocative, stimulates memories or states of mind through moments of verbalization after listening to music; further, music is used in order to facilitate the recognition of environments or structured moments of the day; finally, listening

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to music (classical music, favourite music, etc.) is used in the belief that it can effectively reduce behavioral disorders and enhance mood or socialization (Raglio, 2008a).

This assumption raises a question: are music therapy and music experience applied to a pathological condition the same thing?

It is possible to believe that music itself has beneficial effects, but I think it is time to consider how little this is related to the concept of therapy. This concept is linked to the possibility of acting on the reduction of symptoms or on the prevention/stabilization of complications resulting from them (secondary and tertiary prevention), with consequent impacts on the general quality of life of the person (Smith and Lipe, 1991; Aldridge, 1993; Kneafsey, 1997). It seems clear that the benefits of therapy should be repeated regularly, last in time and should be explicitly based upon an explicative theory (Schön et al., 2007). It is also important to understand, through further clinical applications, what subjects can find any therapeutic effect in music therapy treatment. Beside the general potential benefits of music, often defined as "music therapy" although in the absence of the above mentioned conditions, there is a definition of "music therapy" that is acknowledged and proposed by the international music therapy community¹. This definition refers to some elements that are deemed essential in order to consider music therapy as a potential therapeutic intervention involving the use of sonorous-music elements:

- The presence of a qualified care-worker (the music therapist)
- A music therapy model based on a theoretical and methodological background
- The presence of a structured setting
- Aims (which aspire to become stable and lasting over time) linked to changes of the person or changes of parts of his/her functions
- The constant reference, in therapeutic treatment, to an intrapersonal and / or interpersonal plan (Raglio et al., 2009a).

Regarding to the training of music therapists, it refers to music and relational skills that characterize those who work in this area. This specific training (structured according to widely consolidated and shared criteria¹ that are defined by the principal music therapy associations, e.g. the World Music Therapy Association, the European Music Therapy Confederation, the American Music Therapy Association, etc.) takes place through specific courses which are in many countries university-based. The choice of a music therapeutic model appears as a fundamental element characterizing each intervention based on the therapeutic relationship.

Even in music therapy, like in other therapeutic approaches, it is important to define a space-time frame and a set of rules ("therapeutic setting") to promote the therapeutic action and change. The music therapeutic treatment aims at the establishment of a relationship, and

¹ Music therapy is described as the use of music and/or of its components (sound, rhythm, melody and harmony) by a qualified music therapist, in individual or group relationships, in the context of a formally defined process, with the aim of facilitating and promoting communication, relationships, learning, mobilization, expression, organization and other relevant therapeutic goals intended to meet physical, emotional, mental, social and cognitive needs. The main finality of music therapy is that of developing potentialities and/or rehabilitating an individual's functions so that he/she might achieve an improved integration on the intra- and interpersonal levels and therefore an ameliorated quality of life through prevention, rehabilitation or therapy (World Federation of Music Therapy, 8th World Conference on Music Therapy, Hamburg, 1996).

the sonorous-musical element is the means that helps create this relationship, that is the very core of the discipline.

A BRIEF REVIEW

In general, literature supports the effectiveness of music therapy in the field of dementia through data and documented experiences that mixed musical and music therapeutic experiences. However, there are gaps and shortcomings in the methodological criteria of the studies. These often shows a low scientific level of evidence: randomized controlled studies almost lack and they are poorly defined in terms of content and of process and outcomes evaluation. For these reasons research in this direction is encouraged (Koger and Brotons, 2000; Vink et al., 2004). Positive effects of music and music therapy were found on psychological and behavioral disorders (Clendaniel and Fleishell, 1989; Gerdner and Swanson, 1993; Casby and Holm, 1994; Goddaer and Abraham, 1994; Brotons and Pickett-Cooper, 1996; Denney, 1997; Clark et al., 1998; Groene, 1999; Raglio et al., 2001, 2006, 2008, Snowden et al., 2003; Svansdottir et al., 2006), on cognitive abilities (Smith, 1990; Rauscher et al., 1993, 1997, Johnson et al., 1998; Koger and Brotons, 2000), on social and relational skills (Clair and Bernstein, 1990; Brotons et al., 1997; Koger et al., 1999; Koger and Brotons, 2000; Raglio et al., 2001, 2006, 2008), on depressive symptoms (Hanser and Thompson, 1994; Fox et al., 1998, Snowden et al., 2003, Guétin et al., 2009) and on the overall quality of life of the person (Smith and Lipe, 1991; Aldridge, 1993; 1994; Kneafsey, 1997; Pacchetti et al., 1998). Positive influence of music and music therapy was also found on the caregiver's emotional distress and defeat (Clair and Ebberts, 1997; Clair, 2002; Brotons and Marti, 2003).

Music therapy treatment, in fact, can trigger a new way to communicate with persons with dementia, creating the opportunity to retrieve a relational-emotional dimension that is otherwise impossible to achieve.

It also seems important to stress that, since in dementia you face a significant cognitive deficits, the sound-music element may constitute a more intact and still available material in the brain, both in terms of listening and of production (Aldridge, 1994; Glynn, 1992; Braben, 1992; Polk and Kerstes, 1993; York, 1994; Lipe, 1995; Raglio et al., 2001; Sacks, 2006).

Particularly interesting are also some studies carried out at the Japanese School of Nursing of Mie Prefectural College of Nursing that demonstrate, through controlled clinical trials, how music therapy acts positively and consistently on behavioral disorders and decreases levels of stress in people living with dementia (Suzuki, 2004; 2005).

The novelty of these studies is given by combining traditional assessment tools (such as Mini Mental State Examination, Gottfries-Brane-Steen Scale, Multidimensional Observation Scale For Elderly Subjects) (Folstein et al., 1975; Gottfries et al., 1982; Helmes et al., 1987) and biological indicators such as the Chromogranin A and Immunoglobulin A for the detection of stress and of the immunological status.

Other studies have investigated the possible correlation between the effects of music therapy in general and the changes of some physiological parameters. Kumar et al. (1999) showed an increase of melatonin in blood in 20 persons with dementia undergoing music therapy sessions for 1 month. Kubota et al. (1999) have studied lymphocytes "natural killers"

(NK) on a group of persons with dementia undergoing music therapy treatments. The lymphocytes NK cells are immunological indices: quantity and numerical changes in their activities are closely linked to resistance to viral infections, to the occurrence of cancer and to the rapidity of formation of metastases. From the outcomes it is clear that the musical activities conducted in this study (to sing or to play an instrument) have contributed to an increase in NK. Long-term effects of music therapy were investigated according to psychological and physiological parameters by Takahashi et al. (2006). The authors studied a group of elderly people with dementia and measured physiological parameters such as blood pressure and, through a saliva sample, the level of cortisol, the adrenocortical hormone whose level increases with stress. The results of the study led to the conclusion that music therapy has a homeostatic effect, that is of pressure regulation, and therefore music therapy can be considered as a preventive therapy to heart and brain diseases. In relation to the levels of cortisol, there were no significant differences between pre- and post-therapy to six months, one year and two years.

Two recent reviews focus their attention on some of the most significant aspects that concern the research in the field of music therapy: the methodological questions and the contents proposed in the music therapeutic experience. Vink et al. (2004) in their recent Cochrane Review concerning the application of music therapy in dementia, analyzed 354 studies of which only 5 are included in their revision. Only these studies, in fact, follow the scientific methodological criteria for the inclusion in the review (randomized controlled trials that reported clinically relevant outcomes associated with music therapy in treatment of behavioural, social, cognitive and emotional problems of older people with dementia). Raglio et al. (2009a) focus their attention not only on the methodological aspects of research, but also on the contents of the music therapeutic interventions, reporting studies that show a suitable methodological structure but also approaches that use therapeutic models of intervention.

A POSSIBLE APPLICATIONAL MODEL: MUSIC THERAPY AND THE INTERSUBJECTIVE PERSPECTIVE

The Theory

A key point for music therapy is the biological-relational significance of sound, that is the fundamental principle in the organization and regulation of the individuals' development (Stern, 1985).

The sound elements indeed contain the archaic and innate aspects from which the communicative-relational potentiality arises.

The psychological concepts of "intersubjectivity" and "regulation of emotions" explain the idea that the individual uses innate skills that promote the interpersonal relationship and contribute to the emotional and cognitive development (Tronick, 1989; Trevarthen, 2001).

Music therapy sets up an archaic communication linked to sensory and expressive pathways of which the sound can be the vehicle.

Therefore, sound may be an element of great importance in determining the "affect attunement" described by Stern (1985), able to create "meeting moments" (Stern, 2004) in

the relationship. Through sound, new intersubjective fields are developed that modify the relationship and induce the co-creation and the sharing of relational and emotional experience.

The interaction between the music therapist and the person with dementia, through musical instruments (percussions, glockenspiels, xylophones, etc.) and the modulation of sonorous parameters (intensity, dynamic, agogic, etc.), facilitates the processes of organization, co-regulation and attunement of the emotional components (Beebe, 1998; 2005; Fogel, 1993).

From a therapeutic point of view, this allows us to understand each other, to define our own position in the relationship and to share the intersubjective experience. That can help the individual feel recognized and redefine himself reflecting another one, consolidating and renewing his own identity (Stern, 2004). The outcomes of this intervention may lead to increase communication-interpersonal skills, to reduce psychological and behavioral disorders and to improve the quality of life of the person with dementia.

The Method

Also from the methodological point of view we are observing an effort to systematize the music therapy intervention aimed at persons with dementia (Raglio et al., 2001; Villani et al., 2004).

The treatment proposed here appears to be non-invasive and therefore there are no specific contraindications. The treatment is particularly indicated for people with a moderate-severe stage of dementia (from 1 to 3 level of the Clinical Dementia Rating) (Morris, 1993), also with severe behavioral disorders. For this reason the music therapy treatment can be addressed to a single person or to small groups (3-4 participants). It is important to ensure the willingness of the person with dementia to undergo the treatment, but also to verify the suitability for intervention through a specific music therapy assessment. It is possible to grasp, in the specific setting, the person's sensitivity to the sonorous-music element, and his willingness to develop a relationship with the music therapist.

The therapeutic contract explains to the person undergoing intervention the content, the purposes and how the treatment will be conducted.

The sessions (with a bi- or tri-weekly cadence, and an established duration that generally does not exceed 30 minutes) take place in a not very large room, acoustically isolated and without interfering or potentially disturbing stimuli.

The instrumental setting should be essential, easily accessible and should possibly remain unchanged over time.

The music therapist's behaviors are generally not verbal, not directive and based on the empathetic listening.

Verbal communication is used where it is necessary to direct the person in the music therapeutic setting or to soothe and calm down behaviors.

During the session, the music therapist will try, through the free use of sound and of musical instruments (improvisation) (Benenzon, 1981), to build a relationship with the person with dementia, facilitating the expression and the sharing of his emotions.

The intervention evaluation can be made with qualitative (clinical approach) or quantitative (scientific approach) methods. The evaluation concerns the "process" (what

happens in the music therapy session) and the “outcomes” (which are found outside the setting).

For the process evaluation, protocols or observational schemes are used that produce comments/data on sonorous-music interactions and on the relationship between the music therapist and the person with dementia in the session; to evaluate the outcomes of the treatment, clinical tools are used to assess changes in functional, cognitive and behavioral areas.

The music therapist can decide the conclusion of the treatment observing the following conditions: the person with dementia has reached a stabilisation of the results that leads the music therapist to think that no further results can be achieved. In the other case, the natural development of the disease makes the prosecution of the treatment difficult or impossible.

Effectiveness of Music Therapeutic Approach in Dementias

In this field (as for other diseases in which, even if for different reasons, the communication functions that are more recent in ontogenetic development are compromised) we can conceive the possibility of reactivating and expanding archaic expressive and relational abilities. These abilities persist along the whole life-span as forms of interpersonal experience, alternative to the verbal communication.

It is on these bases that the sonorous-music elements can build a communicative bridge for persons with dementia. In fact, music therapy can be considered a non-verbal communication form and may prescind from symbolic and abstractive abilities and from culture-bound learning processes.

Through music therapy, therefore, it is possible to activate relational and expressive ways of natural (and archaic) origin that are most likely still present in persons with cognitive impairment. Music therapy can help the person with dementia maintain a sense of identity and to recognize the environment. In psychological terms, it determines a regression, shared and guided by the therapist: this regression facilitates a larger adaptation of the person with dementia because it allows him to create more harmonious inner frames that is to better organize and manage his emotional competences. I also think that this can be better pursued through an active approach (sonorous-music improvisation) which involves essentially non-verbal / sonorous-music aspects in the relationship between the person with dementia and music therapist. The receptive techniques (music listening), in music therapy, involve on the contrary verbal and elaborative competences that lack in the person with dementia, especially in the medium-advanced stage of the disease. In this case, listening to music can trigger emotions that the person is unable to manage and contain, leading to states of discomfort and/or disorder. Music therapy can induce a better organization of the emotional components of the personality and at the same time, since music is also a mental activity, can stimulate cognitive functions such as attention, sensory-motor co-ordination and abilities of stimulus discrimination.

In dementias, music therapy can influence mental and behavioral disorders, induce organizational processes and the (co-)regulation of emotional components and possibly promote new learning strategies, while improving relational and social aspects, and therefore the overall quality of life of the sufferer.

RESEARCH IN MUSIC THERAPY: A SCIENTIFIC APPROACH

Music therapy is moving towards a systematic process by determining an increase of scientific criteria in the field.

This implies discussions regarding theoretical and methodological aspects and a rigorous effort to make the relationship between theory and practice more coherent; such effort should also introduce research as a foundation element in the discipline.

In fact, music therapy, in a similar way to other areas of knowledge of recent application, can be better defined as a practice that is based on empirical aspects applied to different diseases through the use of sound and music.

Since music therapy focuses on the therapeutic relationship, there are still many gaps in the theoretical formulation and in the contents of the interventions.

Often, as quoted before, the presence of music together with a disease (in our case dementia) leads to use the term “music therapy”, without considering the specificity of music therapy intervention, which is instead related to theoretical basis, enforcement aspects, specific contents and verifiability of the results.

I believe that this background can help find an adequate definition of music therapy and encourage suitable application.

Raglio et al. (2009a) highlight 3 key areas which define the scientific approach for music therapy intervention:

- (a) defining the contents of the intervention (reference to the theoretical application model)
- (b) assessment of the process (analysis, with specific evaluation instruments, of the changes in the therapeutic setting)
- (c) assessment of the results (reference to the conditions of randomization and of control).

A randomized controlled study (Raglio et al. submitted), referring to these criteria, compares a treatment based on cycles of music therapeutic sessions with the analogous study (Raglio et al., 2008) based on a continuous music therapeutic regimen. Both studies assess music therapy effectiveness in reducing behavioral and psychological symptoms in persons with dementia. Sixty persons with dementia were enrolled in this study. The music therapeutic model is related to the sonorous-music improvisation and the intersubjective psychological approach (Raglio et al., 2009b). All of them underwent a multidimensional assessment including Mini Mental State Examination, Barthel Index and Neuropsychiatric Inventory (Folstein et al., 1975; Mahoney et al., 1965; Cummings et al., 1994). The experimental group underwent 3 cycles of 12 active music therapy sessions each (administered within 1 month), 3 times a week. Each session lasted 30 minutes and involved a group of 3 persons with dementia. Each cycle of treatments was followed by 1 month of wash-out. This intervention structure was led for a total duration of 6 months. Each session was videotaped with a fixed camcorder; the videotapes were analyzed by music therapists not directly involved in the process through an observational scheme. The control group received only educational and entertainment activities (occupational activities, reading a newspaper, physical activities, etc.). In this study, in the Neuropsychiatric Inventory evaluation of the

experimental group, significant effects over time are shown ($F_{7, 357} = 9.06, P < 0.001$), and also between groups ($F_{1, 51} = 4.84, P < 0.05$). The comparison between this study and the previous one shows that in both cases the music therapy treatment significantly reduces behavioral and psychological symptoms of dementia. Both investigations show an analogous Effect Size ($d = 1.91$ vs $d = 1.87$), comparing the scores between the baseline and the end of the treatment in each study. This indicates the possibility of effectively conducting a music therapeutic treatment through cycles of sessions with the involvement of more people and lower intervention costs.

The data of these studies suggest the effectiveness of music therapy: however, the evaluation of the results is very complex, particularly for the lack of standardized and validated instruments, for the difficulty of selecting homogeneous samples from a clinical point of view, and the tendency to decline of people with dementia. Another problem is the difficulty of measuring general changes found in everyday life of persons with dementia. The assessment tools do not seem to be always adequate to analytically detect changes determined by music therapy treatment in behavioral and psychological aspects.

CONCLUSION

I believe that music therapy should make a greater effort in the definition of applicational models (theoretical background, techniques and procedures to verify the interventions) in order to produce an "evidence based practice" (Mace, 2001; Vink et al., 2003; Raglio, 2008b).

It is also clear that there are still gaps in the methodological research, such as the paucity and the insufficient clinical definition of the sample, the limited duration of interventions and the lack of standardized and validated instruments aiming at evaluating the therapeutic process.

Moreover, there is a lack of controlled and randomized-controlled studies.

The increase of such studies can certainly lead to a scientific validation of the intervention and thus to recognize to music therapy a therapeutic dignity.

I think, moreover, that in the evaluations of the results we should remark in a more appropriate and refined way the changes in the relationship and in the emotional-affective area; this can be done also using observational techniques out of the music therapy setting (Raglio et al., 2009a).

Studies which also use biological evaluations as indicators of efficacy (Kubota, 1999; Kumar, 1999; Suzuki, 2004; 2005; Takahashi, 2006) seems to be promising. Biological indicators of efficacy are extremely important, they can be measured with a non invasive practice, like the traditional evaluations in persons with dementia and allow greater objectivity and measurability in the evaluations of changes.

These considerations may be a stimulus for future studies in order to highlight the potentiality and specificity of music therapy intervention, whose positive effects are already evident in clinical applications.

APPENDIX 1: A CASE REPORT

Mr. G. has a diagnosis of mixed dementia (Alzheimer's disease associated with cerebrovascular disease) of mild level (CDR = 1)(Morris, 1993) according to the NINCDS-ADRDA (Mckhann et al., 1984) criteria, with a significant inclination to loneliness. Mr. G. has no deficit in motor skills and he walks independently and without any support.

He has been attending an Integrated Day Center after having memory disorders and prolonged periods of social withdrawal. The presence of depression and apathy in an early period leads Mr. G. to stay in bed all day, without attending any activity organized by the Center's educators. In addition to this, a strong state of anxiety emerges that is increased by the presence of dementia.

After a few months the patient begins to take part in the activities of the Center, although he often tends to isolation from the group, and his involvement in such activities is never spontaneous. Mr. G. is suspicious and shows a consequent resistance to any attempt of involvement done by the physicians and/or by the caregivers.

The music therapist asks Mr. G., through a preliminar interview, for willingness to attend one session of evaluation, in order to hypothesize the beginning of therapeutic treatment. Mr. G. shows resistance and doubts about the usefulness of this intervention, the transfer necessary to go to the room of music therapy and his ability in the use of musical instruments. Mr. G. accepts, however, to attend in the sessions of assessment.

These sessions are designed to verify the level of agreement to non-verbal communication and sensitivity of the person in relation to sonorous-music elements. During the music therapeutic assessment, particular attention is given to the approach of the person to musical instruments and his tolerance and acceptance of the music therapeutic setting. During the first session of assessment, 7 minutes after the beginning Mr. G. firmly expresses his will to stop the activity.

A further interview reassures Mr. G., especially in relation to his idea of being unable to use the musical instruments.

In the second session of assessment Mr. G. accepts the non-verbal setting and uses the musical instruments spontaneously. Nevertheless, Mr. G. uses verbal communication to ask confirmations and assurances about the use of some musical instruments. The session has approximately a duration of 20 minutes. The changes shown by Mr. G. during the music therapeutic evaluation induce the music therapist to begin the treatment. Mr. G. is informed of the decision in an interview which defines the purpose and the application form for his participation in the intervention.

The 30 sessions of the treatment are bi-weekly and have a duration of 30 minutes each; each session is recorded from a camcorder in order to assess, later, the relational and sonorous-music dynamics emerged in the music therapeutic setting.

The rhythmic-melodic instruments used during the sessions (percussions, glockenspiels, xylophones, ethnic instruments, etc.) are easy to play and their semicircular placement makes their use by Mr. G. easier.

The music therapeutic improvisation technique is used with the purpose to activate a relationship based on the expression and sharing of emotional states, in order to create moments of affect attunement.

During the treatment there are significant changes in the relationship between Mr. G. and the music therapist. These changes concern in particular the use of musical instruments: in the initial stage of the treatment the sonorous-music elements are used by Mr. G. with cognitive and exploratory intention; the productions of Mr. G. are characterised by many rhythmic stereotypes to the entire duration of the sessions, without any variations. Between the music therapist and Mr. G. a syntonic production arises, that is characterised however by a formal share of sonorous-music parameters, more than by a real emotional share. Mr. G. must often be reassured and calmed down verbally. The verbalizations divert the attention of Mr. G. from non verbal and sonorous-music interaction. Initially, Mr. G. frequently asks to suspend the sessions before the prescribed time, but the music therapeutic relationship gradually changes Mr. G.'s behaviors. He shows greater willingness in the relationship and this appears even in his sonorous-music production. The production, in fact, becomes more and more varied and dynamic, contextually to the reduction of sonorous-music stereotypes and verbalizations. This promotes the direct contact with Mr. G. and his greater emotional expression. Sonorous-music moments of attunement make Mr. G. more quiet and involve him emotionally, leading to empathetic moments of relationship.

The sessions analysis, made through the Music Therapy Checklist (Raglio et al., 2007), shows an increase of the attuned sonorous-music production (especially in relation to the duration of the sonorous-music interactions), often accompanied by a greater emotional involvement of Mr. G. (visual contacts, smiles, syntonic body movements according to sonorous-music production, etc.).

In addition, disattuned productions without a relational meaning decrease during the whole music therapeutic process.

The monitoring of anxiety and depression, made by the State Trait Anxiety Inventory (STAI) (Spielberger et al., 1970) and by the Geriatric Depression Scale (GDS) (Brink et al., 1982), shows some important changes after the treatment. Both scores of the two scales of assessment decrease significantly after the treatment (STAI score before the treatment = 38 and STAI score after the treatment = 23; GDS score before the treatment = 6 and GDS score after the treatment = 1) and tend to increase slightly between the first and the second follow-up (respectively to 1 month and 3 months after the end of the sessions). Moreover, there are also very positive results concerning prompt effects of the sessions on the symptom of anxiety (comparison between before and after the treatment)

From the behavioural point of view, Mr. G., generally shows a greater level of agreement towards the sessions and the occupational and rehabilitative activities. Mr. G. is more participating and motivated in relation to these activities.

The session duration gradually increases: the first session of assessment has a short duration (7 minutes), whereas the last session has a long duration (33 minutes).

This experience suggests that music therapeutic intervention based on an improvisational/ intersubjective approach has encouraged and facilitated the contact with Mr. G., allowing him to express his emotions, through sonorous-music and non-verbal communication. The empathetic moments and the emotional modulation and calibration in the relationship between the music therapist and Mr. G. have triggered an emotional (co-)regulation process. This process has led to significant changes in the relational and clinical aspects, both inside and outside the music therapeutic setting.

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