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ORIGINAL ARTICLE

Exploring the Benefits and Uses of Musical Experiences in the Context of Dementia Care

Kagari SHIBAZAKI [1)] Nigel A. MARSHALL [2)]

1) School of Human and Health Sciences, University of Huddersfield, UK.
2) School of Education and Social Work, University of Sussex. Falmer, UK.

ABSTRACT

By the time the average reader reaches the References section of this paper, statistics from the Alzheimer's Society (UK) suggest that an additional 187 people, worldwide, will have been diagnosed as having some form of dementia. A combination of the rising costs of dementia care and increasing evidence that costly medical interventions seem to provide a relatively limited number of benefits, has generated a corresponding interest in a wide range of non- pharmacological interventions for those with dementia. In this paper, we present a summary of the initial findings from an on-going comparative study carried out in Japan and England. Our research design involved a series of interviews and structured observations carried out with participants, nursing staff and family members, all of whom attended a series of music concerts in Japan and England. Our initial findings suggest that musical experiences can produce significant benefits for those people living with dementia and all those involved in their care.

〈Key-words〉
dementia care, music, psychology, families, nursing, care services

k.shibazaki@hud.ac.uk (Kagari SHIBAZAKI)

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I. Background

"Η μουσική είναι στο μυαλό όπως ο αέρας είναι για το σώμα"

Plato

(Music is to the mind as air is to the body)

Worldwide, an estimated 46.8 million people have been diagnosed as living with dementia with approximately 9 million new cases occurring every year. This figure represents one new case every 3.2 seconds (Alzheimer's Disease International, 2015). Globally, by 2030, the total number of people with dementia is projected to rise to almost 75 million and to increase to an estimated 135 million by 2050. If current patterns continue, 49% of these new cases will occur in Asia and 25% in Europe with the global costs of dementia estimated soon to reach US$ 800 billion. In Japan, almost 4% of the population have been diagnosed as having some form of dementia; a figure that represents one person in every four people over the age of 65 years. In the UK, one in six people currently have been diagnosed as having dementia and it is estimated that 225,000 new cases will be diagnosed during the coming year; a figure which represents one new case of dementia occurring in the UK every three minutes.

The idea of music as 'medicine' or as a 'nursing tool' is far from new. In fact, music has long been associated with the treatment of various physical and psychological conditions and philosophers in ancient Greece believed that music could heal both the body and the soul (Fauval, Flood & Wilson, 2006). Yet, in spite of this long historical link, the current global, economic climate has caused people to question if the money spent on non-pharmacological interventions; such as musicians in care homes, is money well spent. However, Bellelli et al. (2012) recently calculated that the cost of musical interventions can be as little as 1/70th of the expenses involved in daily care. When compared to the costs of buying medication and various types of therapies, from which individuals may or not gain some benefit, (see Banerjee, 2013); we argue in this paper that music can be a highly cost effective and non-invasive, non-pharmacological intervention producing far ranging benefits for nursing staff, participants, and their families.

The use and benefits of music with those living with dementia, is a comprehensively documented and well researched area of academic interest with a plethora of studies reporting on the significant benefits to be gained by people living with dementia from regular engagement with musical activities (see for example, McDermott, Crellin, Ridder & Orrell, 2013; Sixsmith & Gibson, 2007; Spiro, 2010; Sung & Chang, 2006). More specifically, numerous studies have reported on the decreased levels of anxiety, aggression and agitation obtained following engagement with music (Cooke, Moyle, Shun, Harrison & Murfield. 2010; Lai, 2004; Ledger & Baker, 2007; Ueda et al. 2013; Vink, et al., 2013). Okabe & Kobayashi (2006) reported increased levels of communication, social

interaction, eye contact and concentration in people living with dementia following regular musical experiences and further studies have persistently demonstrated improved memory and decreased levels of anxiety and wandering in people with dementia (see Moroi et al., 2007; Nuki, 2009; Terauchi, 2001).

Dementia is not a natural feature of aging; it is a physical illness of the brain which results in many mental abilities ultimately diminishing. However, through work carried out by Yamada & Baba (2008), we know that musical skills are amongst the last mental abilities to disappear, (see also Yamada & Shimuzu, 2013). Memories of individual melodies, (although not their titles), and experiences or life events related to them, words to songs and associated feelings and emotions seem to remain long after other cognitive abilities and life memories have disappeared. Therefore in this respect, the case for using music with people with dementia seems to be well made and supported by a significant body of research – based evidence. However, there is one significant research issue to be addressed. Although a substantial number of these previous studies have highlighted the positive benefits to be gained by those living with dementia from engaging in musical activities, many of the previously reported studies, (see for example: Aldridge, 2000; Dennis & Rickson, 2014; Gold, 2014) have been carried out within the discipline of *music therapy,* whereas both the authors of this paper engage with this research area from the perspective of *music psychology,* and a number of significant differences exist here in terms of approach, methodology and theoretical foundation.

First, the most significant difference is that all music therapy activity (including research activity), is carried out with the absolute, explicit intention of producing a positive and beneficial effect; that is, music therapy is required to be *therapeutic*. Whereas from the perspective of music psychology, we are equally interested in all responses to the music, whether positive or negative. Music therapy builds on relationships and mutual understandings which develop through the engagement and interaction between the 'therapist' and the 'patient'. In music psychology, we remain far more disengaged and objective and the relationship is more accurately described as 'researcher' and 'participant'.

Second, the explicit purpose of the 'therapy' is to bring about some positive benefit in the 'patient' and therefore any activity which causes anything other than a positive and beneficial reaction or outcome, tends to be changed. Seen from this perspective, it is therefore hardly surprising that therapy – based research tends to report positive and beneficial outcomes. Third, methodologically speaking, music therapy usually takes place in either one to one settings (i.e. therapist and one patient), or in one to small group settings (i.e. therapist with small number of patients). From this perspective it is therefore often difficult to separate out, if or not the positive benefits to the patient occurs

as a result of the musical activity or as a result of having the undivided attention of one therapist devoted to building an understanding and positive relationship with them. Put simply, is it the music or is it the effect of the therapist /researcher? Thus, within the realm of music therapy, it is often difficult to identify to what extent any resulting benefits are due to the effect of the music or to the intense interaction between the therapist and the 'client' which is designed specifically to be therapeutic (see for example Raglio, et al.,2010; Sung et al., 2012).

From our perspective as music psychologists, our interest rests in a more objective realm. Our methodology attempts to remove the effect of the researcher from the research context; data is collected from *participants* and not from *'patients'* or '*clients'*. Our observations are carried out in large group, naturalistic settings in which individual participants become anonymous audience members rather than individuals who build a relationship with a therapist. At this point, we wish to emphasise that we neither doubt the significant, positive effects to be gained from engagement in music therapy, nor is it our intention to denigrate the highly effective and professional work done by numerous trained music therapists, our intention is simply to spell out the important theoretical and methodological differences that exist between music therapy and music psychology; and thus, it is these differences that in many ways shape and influence our research designs and the type of outcomes we search for.

In addition to the relatively few studies carried out from the perspective of music psychology, it is also the case that whilst numerous studies have reported on the positive and beneficial effects of music for people with dementia, a relatively limited number of studies have explored the effect of musical experiences on the levels of wellbeing in the family members, nursing staff and other people involved in providing care for those living with dementia, (Hicks-Moore & Robinson, 2008; McDermott, Orrell & Ridder, 2014). However, previous studies that have included family members, report that musical activities are persistently rated highly (Davidson, & Almeida, 2014; Davidson & Fidele, 2011; Osman, Tischler & Schneider, 2014). That is, of all the various activities in which participants and their families engage, music is perceived and reported as being amongst the most beneficial. As a result, certainly in the UK, a range of charities and organisations (e.g. '*Music in Hospitals*' and '*Singing for the Brain'),* put considerable efforts into obtaining funding in order to place musical experiences into hospitals and care facilities.

Therefore, in an initial attempt to explore a clear 'gap in the current knowledge', this research initiative was carried out to specifically explore the range of effects (positive or negative) of the same music experiences on participants, facility managers and nursing staff as well as family members.

Ⅱ. Methods

A total of 22 one hour music concerts took place in 3 care facilities in Japan and 3 care facilities in the UK. Our research tools included systematic observations of individuals living with dementia and semi-structured interviews with some of the participants, their family members, with nursing staff and some activity coordinators. All concerts lasted for a minimum of one hour and involved one or two musicians. Concerts took place within a communal area of the care facility during the afternoon. In total, 53 participants were interviewed which included 27 participants, 13 family members, 9 members of nursing / volunteer staff and 4 care managers. The age of participants interviewed ranged from 71 through to 97 years (M= 87.3).

Although not all concerts were identical, three independent variables were controlled. First, the repertoire was partly controlled in that all concerts included a similar balance of instrumental listening music and familiar songs for joining in with. Second, all concerts were kept to about one hour duration, in order to avoid fatigue and all took place during the afternoon between 2pm and 4pm and finally, only professional musicians experienced in working with individuals with dementia were involved in the project. Interviews were carried out in a public space within the care facility immediately following each of the concerts and all interviews were recorded and later transcribed. Data from interviews was analysed in three stages according to standard qualitative procedures (see Robson, 2011). Our analysis consisted of producing summative sheets of keywords, key concepts and opinions taken from the transcriptions (Stage 1) of the 53 interviews. This summative data was subsequently assigned to one of a number of initial categories and following an iterative process, initial categories were re-organised until four main themes emerged into which all key words, concepts and responses could be assigned (Stage 2). Finally, reliability of thematic material and categories was established through an independent third party (Stage 3). As a result of this third stage, two of our initial themes were re-structured into alternative categories and one theme was re-titled.

Observations of residents with more advanced dementia were recorded manually in field notes. Ethical approval for the research was given by the UK University. All participants provided written consent. For participants with more advanced dementia who were unable to give written consent, family members were asked to give consent.

Ⅲ. Results

Our initial results suggested that music can be an appropriate non-pharmacological intervention providing significant benefits not only to participants but also to their

families and to their care staff. Following standard qualitative procedures of analysis, we report our results according to our four main emerging themes namely, i) Music and physical impairment, ii) Music and physical responses, iii) Music and dementia and iv) Music as an indicator of cognitive activity.

1. Music and physical impairment

Overall, both participants and nursing staff reported on a number of benefits which the concerts provided for participants with physical impairment. In addition to having early to mid-stage dementia, 56% of our population were either disabled, blind or physically challenged in ways that limited their movement and coordination. For this category of participant, music was actually one of the only activities in which they could fully participate as an individual without needing additional support or feeling they were interfering with the pace and overall flow of the activity. For blind participants, music concerts provided an activity in which they could not only partake but also regain a degree of self respect and independence and 6 blind participants reported, 'feeling relatively normal' during the concert. Whilst blind participants spoke about being invited to take part in some of the other activities e.g. simple cookery or quiz activities, they also noted how they often felt too reliant on others for their participation and this ultimately impacted on their level of enjoyment. For example:

> "*When you have to rely on other people for almost everything you do, it feels so good to be able to do something on your own without somebody having to tell you what is going on"*

and

> *"I get depressed when I cannot remember things or see to do things like other people can but in the concerts, I can remember every single word, and I think well ! I am not totally useless - I can remember something"*

For blind participants, musical concerts enabled them to re-gain their own individual musical identity, which mostly remained intact as opposed to their post dementia / disabled identity. More specifically, where other activities often generated a focus on what could no longer be done, the music concerts had the benefit of focussing on what could be done and mostly without the aid of additional help.

For nursing staff, music concerts were a way in which they could actively engage with blind participants in a different realm. Conversations about the music were seen to be different from those experienced in other contexts as the disability did not interfere with the activity. As one activities manager remarked:

"With the music, you forget they are blind and you engage with them on a different level – in fact they notice more than those of us who are not blind because their hearing can be more acute"

Similarly, other nursing staff reported that concerts enabled them to focus more on what the individual could do, rather than what they could not do. For example:

"*In other activities, you focus on their safety and always making sure they know what is going on or having to help them, but the concerts enable us to listen to them and you get a very different idea of who they are"*

2. Music and physical responses

Although it was not our intention to carry out any form of assessment of on-going physical conditions in people with dementia, our observations during the concerts highlighted the fact that it was possible to use music to make accurate observations of changes in physical conditions. For example, in one case study, one participant with dementia had recently suffered a chest infection and mild stroke affecting her ability to speak. Improvement in her physical condition was slow and assessment of her actual progress was hard to assess on a weekly basis, requiring a much longer period of time to pass before standard measures revealed any form of improvement. Additionally, some of the standard measures of assessment could either be invasive and unpleasant or require a degree of cooperation from the participant, which was not always forthcoming as a result of the dementia. Similarly, simply asking the participant to describe any changes she experienced in her physical condition was almost impossible, as a result of the dementia. However, during the music concerts, the participant always voluntarily joined in with the singing and would willingly partake in almost a full hour of vocal activity.

It was this vocal activity that enabled nursing staff to identify any improvements - or not:

	Observable changes	As evidenced by
i	Increase / changes in lung capacity	Duration of note she was able to sing
ii	Increase / changes in physical ability	Changes in ability to formulate the words to the song
iii	Increase / changes in stamina	Length of time she remained active in the concert
iv	Increase / changes in motor coordination	Degree of success in formulating words as tempo increased or ability to accurately tap in time to the rhythm or the beat of the music
v	Increase / changes in mental / emotional condition	Degree of engagement with the concert (e.g. smiling, interacting, recognising humour in the words or applauding at the end)

Nursing staff reported that taking part in the singing enabled not only a wider range of conditions to be assessed but also to assess individual improvement (or not) in far more detail than with other more invasive clinical measures.

Work by Levesque, Ducharme, & Lachance, (2000), reported on the significant levels of guilt often experienced by family members when a partner or parent transitions from home into a long term care facility. As a result of these increased levels of guilt, the study further highlighted the fact that many family members or partners continued to visit the care facility, often on a daily basis in order to continue to provide substantial levels of care for significant periods of time following transition (see also Kydd, 2001). Certainly, the family members interviewed in our current study reported feeling significantly increased levels of guilt, feelings of inadequacy and feeling they should have been better able to cope with their parent or partner. Over 86% of family members spoke about continually questioning their decision to place their family member into care. However, either attending the concerts with their family member or seeing video clips of their family taking part in the concert were highly valued and went some way towards reducing the level of guilt that many reported feeling. One family member reported:

> *"This place was not our first choice – we wanted another home and we were reluctant about (name)…coming here, but it was the concerts that were a turning point – they have nothing like this at the other place and this is the bit that we all like best"*

Attending the concerts, or seeing video clips of their loved one in the context of the music concert, contributed to a good number of positive memories of their loved one being happy, joining in and enjoying life. One additional benefit was reported by a family member who noted that video clips of her parent taking part in the concerts were considerably more useful than frequent reports and updates from doctors and nursing staff, in that the video clips taken in the concert provided her with real concrete evidence of the gradual but significant improvements in her parent's physical condition over a period of weeks.

In addition, participants who had both dementia and also had either further physical disabilities or had experienced a stroke, were frequently seen to benefit significantly from music concerts. In one instance, a severe stroke had left one participant with the limited use of only one arm. Exercising the arm to prevent muscle atrophy was vital and yet physiotherapists often experienced great difficulty in encouraging any form of exercise for significant periods of time. Constant requests or attempts to engage in any meaningful period of exercise mainly instigated increased levels of anxiety or agitation and sometimes even mild forms of verbal aggression. However, it was noted that during

musical events, this individual would persistently spend over one hour moving ('exercising') his arm voluntarily. Subsequently, nursing staff were able to use recorded music in between concerts in order to ensure some level of ability in using this one arm continued.

3. Music and dementia

For those living with dementia, it is not usually possible to carry out meaningful interviews. However, in this study, our interviews with nursing staff and families revealed the following benefits gained from engaging with the musical activities.

First, music was seen as an appropriate and effective stimulus for promoting memories of life events, stories and people. In common with the work reported previously by Yamada & Baba (2008), and others, in our study it was noted that participants became more social, more vocal and more motivated to talk. Family members reported that individual pieces of music often generated memories and stories they had not previously heard or had forgotten and nursing staff reported that this effect often lasted for a considerable period of time beyond the day of the actual concert. This effect was found to be particularly beneficial for males in that whereas it was often the case that females would frequently interact and converse with each other, males were more often likely to be quiet, detached and less communicative. However, nursing staff observed that males were far more likely to talk to each other following the musical events.

The increased levels of communication was a feature seen as being particularly important to family members. Not only did the concerts give family members more to talk about, family members appreciated what might be their final memories of their loved one. For example, one family reported:

> *"I will remember today because you we have had such a great time and it is nice to have good memories rather than all the other things that happened- this is what you remember and in years to come it will bring a smile to my face"*

Second, even those participants with more severe forms of dementia often managed to demonstrate they had a musical identity and this remained long after other personality traits had disappeared. Participants, even those with quite advanced stages of dementia still demonstrated evidence of musical taste by expressing preferences for individual songs and musical styles they either enjoyed or not. Positive responses and preferences for musical styles or individual songs were expressed through:

i	Increased levels of attention to the musician
ii	Joining in by tapping, moving or singing
iii	Smiling or other indicator of positive emotion
iv	Staying awake or remaining within the concert space throughout

Negative responses or dislike of pieces or lack of tolerance for individual songs or styles of music included:

i	Decreased levels of attention
ii	Fidgeting or attending to something other than the music (the chair / handbag etc.)
iii	Asking to, or getting up to leave the concert space
iv	Anti-social behaviour such as shouting, annoying others, banging cups or books
v	Talking loudly

One interesting effect of the benefit of the music on some participants with quite advanced dementia was the fact that they simply sat quietly and did not react. For example, where participants often engaged in frequent anti-social behaviour, the benefit of the music was that they ceased that behaviour and sat quietly. That is, the total lack of a reaction was in fact the strongest and most beneficial reaction. One member of the nursing staff pointed out:

> *"(name)…will always want to wander off to find his father and sometimes he can get a bit difficult but he is fine here, some of the nurses are amazed to see him just sitting there – listening and joining in"*

Other indications of the benefits of the concerts on those with dementia included decreased levels of attachment behaviours such as reaching out and touching others or attempting to leave or wanting to look for a parent and in addition, the fact that almost all participants remained in the concert space for over an hour focussing on essentially one activity was seen as a major and significant feature of the music. It was reported by one nurse that very few activities lasted for over thirty minutes due to the inability to concentrate however, the music concerts often lasted for well over one hour and almost all participants not only remained within the performance space but actively took part throughout the whole performance.

4. Music as an indicator of cognitive activity

In addition to assisting nursing staff to make more accurate and sensitive, non-invasive assessments of changes in motor co-ordination and certain physical abilities, we here argue that in some individuals, the physical movements and reactions to musical stimuli we observed, frequently provided detailed evidence for the levels of cognitive activity. Participants with limited language capacity and who were frequently unable to recognise close family members or to communicate basic requests were still able to provide evidence of quite sophisticated cognitive activity in relation to the music. For example, participants were able to:

i	Recognise and react to a steady beat or a rhythm
ii	Recognise and respond to changes in speed (tempo)
iii	Recognise the meaning within the words of songs
iv	Predict and respond to humour in the words of songs
v	Display evidence of liking / disliking for a musical style or individual song
vi	Predict endings to musical pieces and songs by appropriate clapping
vii	Provide evidence of concentration for prolonged periods of time

In three instances, participants with limited language ability were still able to demonstrate quite sophisticated cognitive processing of musical data as evidenced by their immediate responses to changes in pitch by moving either hands or arms in the direction of the pitch change, or what could be described as 'drawing the tune'. For example in one case study, analysis of a video clip revealed an ability to process changes in pitch from one note to the next. Evidence of this came in the form of moving the right hand up or down the left arm. In each instance, the movement of the hand (up or down) corresponded closely to the direction of change of pitch taking place within the song (up or down). There were no corresponding movements, up or down, during longer notes or pauses.

By observing responses throughout the duration of the research project and by gradually identifying reactions which provided evidence of varying levels of cognitive processing, we were able to see changes occurring in the level of cognitive ability which participants were capable of; a feature which proved to be a useful tool in helping nursing staff to more closely assess if changes in an individual's wellbeing were due to a physical or a mental deterioration. Put simply, in the case of people living with dementia, there is often an expectation that decreasing levels of ability or wellbeing are a result of a diminished cognitive ability brought about through the natural progression of the disease. However, in reality it could be that the cognitive ability remains unchanged and it is the physical ability the individual requires to demonstrate this, that has deteriorated. All

told, we simply argue that observing physical reactions and simple responses to musical stimuli gives a further layer of evidence as to what the individual is capable of, in terms of their cognitive processing.

Ⅳ. Considerations and Conclusions

In considering our initial findings from this research, we argue that the use of musical activities within the context of individual care can be an effective and efficient tool in promoting wellbeing and improving levels of care amongst participants, family members and nursing staff. We consider music to be a valuable nursing 'tool' that can provide valuable respite for the full range of professionals, and the individuals in their care and at best, can be an effective 'treatment' and replacement for more expensive pharmacological products. We consider also that the inclusion of specific training for all professionals working in any care context, would enable the full potential of musical activities to be realised.

In conclusion, we would argue that there is evidence to suggest that musical experiences can contribute to increased levels of human service by promoting and creating memories and wellbeing in participants through stimulating, motivating and encouraging increased levels of physical and cognitive activity. There is also evidence that musical events contribute to a more positive atmosphere for all concerned and contribute to an increase in the level of care by increasing levels cooperation, reducing the levels of anti-social behaviour and providing an increased understanding of care needs.

Given the findings of this and previous studies, the increasing costs of dementia care to society and the need to consider further the ways in which non-pharmacological interventions can contribute to the process of caring (Petrovsky et al., 2015), we suggest that future research in this area would be benefit to all those involved in the care of the elderly.

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Editor-in- Chief Masahiro KOHZUKI

Presidents Masahiro KOHZUKI・Sunwoo LEE

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Faculty of Education, University of the Ryukyus, 1 Senbaru, Nishihara-cho, Nakagami-gun, Okinawa, Japan
FAX: +81-098-895-8420 E-mail: ashs201091@gmail.com

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