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'Singing for the Brain': reflections on the human capacity for music arising from a pilot study of group singing with Alzheimer's patients

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Abstract

The paper reports the activities of a pilot study of group singing for people with Alzheimer's and their carers, and presents data arising from the study.

Aims: The project aimed to answer the following questions: Would people with Alzheimer's be able to participate in group singing? Would progress be identifiable in participants' singing? Would responses to the activity be positive? Would participating carers find the activity worthwhile? Additionally, the following question was posed: Within the supportive environment of group singing, might people with Alzheimer's be able to participate in a song that they had to learn?

Methods: Songs were selected that would be familiar to participants aged over 40 years, and one original song was introduced by the group leader following a successful session. The group leader did not know which of the participants were patients with Alzheimer's and which were carers. Participants sat in a circle in a resonant hall. Sessions were filmed and a separate audio recording made and subsequently analysed, and questionnaires were completed by carers after sessions.

Results: Nine hours of video recording, three hours of audio recording and three collated questionnaires (one for each session) were collected. Confidence grew over the three sessions, with a traceable development in the alertness of many of the people with Alzheimer's. It proved possible to divide the group so as to sing two songs simultaneously, and also so as to perform three- and four-part rounds. It proved possible to teach an unknown song. Carers generally felt that the sessions were of value.

Conclusions: People with Alzheimer's are able to participate in group singing and some longer-term benefits are perceived by their carers. In a group activity such as *Singing for the Brain* it is difficult to be certain how the overall effect arises from the interaction of individuals. The data assembled is difficult to submit to clinical testing, relying as it does on the judgement of participants regarding reported recall of the content of sessions on the part of people with Alzheimer's. Further research questions are raised by the success of this project.

INTRODUCTION

The ability to sing is neurologically different from speech.^{1,2,3,4} Those who claim not to be able to sing are often constrained by inhibitions conferred by culture

or education.^{5,6} Singing can represent an opportunity to engage actively in a form of communication that may enhance social interaction where language has been affected by illness or trauma.^{7,8}

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Singing, in comparison with language, can exhibit the features of instinctive behaviour^{9,10} more holistically than speech;¹ it is social in its capacity for 'recruitment arousal';¹¹ and a lifelong extension of the means by which human infants first engage with their environment,¹² representing meaningful retrieval of 'the child within'.⁴ Thus group singing might offer opportunities for the non-verbal exchange and communication of emotion, and for vocal engagement that complements the use of language in adult social participation.

A pilot project was devised to investigate in what ways group singing involving people with dementia – including some diagnosed with Alzheimer's disease – and their carers, might represent a means of retrieving memories, activating new experiences and providing a medium for communication. The outcome of the pilot provided evidence of the benefits of group singing that led to the funding and development of regular *Singing for the Brain* sessions, as well as to a training project to prepare some 30 musicians and health workers for the role of coordinating new *Singing for the Brain* communities.

BACKGROUND

Music therapy approaches in the care of people with Alzheimer's have a long history, since responses to music seem to remain active where other perceptual and communicative abilities are deteriorating. Thus work with Alzheimer's patients may both provide means of offering better care to those with dementia, and also furnish information about the neural nature of musical responses, especially differences in processing between the vocalizations involved in singing and those required for language. Among features that group singing involves is the exercise of simultaneous behaviour, whereby the rhythmic coordination of song relies on a specific response to a stimulus that defines a different aspect of temporal processing to the more serial nature of spoken language. The issue of the processing time for singing in comparison with that required for language, and how both of these change in people with Alzheimer's,¹⁴ was of interest to this study, though the research methods adopted were unable to illuminate this.

Recent research has tested some of the assumptions that gave rise to the protocols

adopted for this study. Yannou, *et al*¹⁵ devised laboratory-based perception tests that illustrate the deterioration of musical perception in Alzheimer's patients consistent with overall cognitive impairment. It is results such as these that suggest that there may be differences between 'passive' musical perception and the kinds of active participation planned for the pilot, in which singers are able to see one another, hear one another's voices, and coordinate in the healthy kind of simultaneous, social behaviour that is characteristic of active engagement with music.¹⁶ Additionally, the process of testing people with Alzheimer's under controlled conditions may yield results that are inconsistent with behaviour in the natural environment. Thus a case can be made for investigations that set out to be non-invasive and, as far as possible, unthreatening in the environment and activities involved. While non-clinical research of this kind cannot lead to generalizable conclusions, it models activities whose benefits to both patients and carers can be tested so as to ascertain how such practice can be further developed.

Funding was secured through the Alzheimer's Society to permit the initiation of the pilot. A series of three workshops was arranged for people with dementia, carers and health workers. Nicholas Bannan devised and led activities that allowed the maximal experience of musical communication and interaction, including games, songs and movement routines. These were recorded on video, while Chreanne Montgomery-Smith also conducted questionnaire research after each session.

Vocal activities included well-known songs, unfamiliar material and 'singalong' items, as well as rounds and opportunities for more sophisticated interaction. The sessions took place in a resonant hall that provided participants with an acoustic reward that motivated confident responses. Participants sat in a circle in order to be able to make eye contact. Screens were placed around the circle so as to mask the activities from distractions and conceal recording apparatus.

Research questions

With initial funding that only permitted a pilot of three weekly sessions, the authors limited the scope of what they anticipated discovering to data that might become

evident through video and audio recording and by the use of a series of simple questionnaires. The research questions addressed in the pilot were:

- ♦ Would people with Alzheimer's be able to participate in group singing?
- ♦ Would progress be identifiable in participants' singing?
- ♦ Would responses to the activity be positive?
- ♦ Would participating carers find the activity worthwhile?

Two previous studies influenced the approaches taken in this project. Millard and Smith¹⁹ evaluated therapeutic group singing in a residential nursing home. They found that participants in their programme socialized more successfully, judged by instances of smiling and touching, and that a difference in social organization appeared to develop. Prickett and Moore²⁰ worked in a more clinical manner with 10 individuals. Their reason for doing so was that they wished to measure word recall, comparing success according to whether the stimulus had been sung or spoken. They concluded that 'musical context noticeably facilitated recall'; and 'AD [Alzheimer's] patients for whom spoken response is becoming problematic, but who have not completely lost this faculty, may be actively involved in vocal expression through singing, especially singing long-familiar songs'. They also reported: 'To a certain extent, new musical material can be learned and some musical involvement can occur even when words are elusive.' However, though the protocols for the study had been devised to test individual responses, the researchers found themselves drawn to a more collective approach: 'The therapist operating the camera quietly joined the singing on the final time through, to add more substance to the sound.' Thus in their conclusions, they suggest: 'For AD patients who must be served individually, such as the homebound, the use of singing would seem to offer opportunities for retaining as high an activity level as possible, for structuring a duet or trio with caregivers or family members, and for providing an avenue for interpersonal interaction which fluent speech no longer can.'

The approach taken in this study was designed to involve patients living with their carers or otherwise able to attend sessions in an independent environment selected and

furnished so as to support musical participation. The focus was on group response: the simultaneous singing of songs and other material, as well as occasional clapping routines and other examples of coordinated behaviour.

METHOD

Nicholas Bannan, as musical leader for the pilot sessions, adopted the protocol that he would not be briefed prior to the first session regarding who were patients with Alzheimer's, who were carers, and who were health workers supporting the venture. Rather, he would plan a flexible session designed to provide opportunities for vocal participation through games and songs for everyone present. In this respect, the conduct of the sessions might be seen to conform more to educational than to therapeutic procedures. After discussion, it was decided to select songs that were likely to be well known to people over 40 years of age, with one exception: a round of his own composition that would be attempted only if he judged it might be likely to succeed. This permitted a comparison to be made between responses to songs that participants already knew and one that none of them could ever have sung before. If it appeared appropriate to attempt this, a further research question would thus arise:

- ◆ Within the supportive environment of group singing, might people with Alzheimer's be able to participate in a song that they had to learn?

The pilot project was carried out in three weekly sessions of about an hour in which vocal exercises and songs were employed to develop group participation. These were filmed in order to allow subsequent analysis of the musical features of developing participation. In analysing the video material, the authors were interested in rates of achievement of learning (especially in material which participants could not have encountered previously); motivation arising in relation to familiar material; and quality of sound as participation developed (volume, flexibility, expressiveness, clarity, enthusiasm, etc.). These observations were compared to information arising from the use of questionnaires in which participants were able to comment on what they had

experienced in the sessions and what they recalled subsequently.

Ethical considerations were addressed both in conforming with good practice associated with projects funded by the Alzheimer's Society, and in eliciting approval at the University of Reading where the first author was based. Since the work was carried out under the auspices of the Institute of Education and did not involve invasive or clinical procedures, it was treated as a continuing education project and granted Head of Institute approval. This was subject to obtaining the written consent of participants to record the sessions on tape and video, and to carry out questionnaire documentation. Participants were free to withdraw at any time. Questionnaires were collected so as to guarantee anonymity, and the first author was only ever party to the first names of participants (these played a significant part in vocal interaction, so were essential to the methods adopted). One carer later volunteered to participate in a BBC programme with her husband, who has dementia, and their names were thus made public by her choice.²¹

Initial reflections on the first session of the pilot study suggested that group singing may have clear benefits for carer-patient relationships and for providing a varied channel of communication between them; and a means of their engaging effectively with strangers. This position gave the authors the confidence to continue with the pattern of activity set during the first session, and especially to persevere with the introduction of new material that participants could not have sung before.

The sessions were all filmed on videotape with a separate digital audio feed. Three cameras were employed so that, in subsequent analysis, the responses of all participants could be viewed. The sound recording was made from a microphone placed at the centre of the circle in which participants were seated, so that no voice was likely to dominate on the recording. Participants were provided with word sheets for the songs if they wished to employ them.

LIMITATIONS OF THE RESEARCH

The documentation of work with people with Alzheimer's disease, especially those in the late stage, can make little use of direct questioning of subjects. Clinical judgements can be made, and these may be supported

by the use of techniques such as brain scans. This project was designed to allow reflection on the practice of singing in a non-clinical environment, and its documentation relies largely on the opinions of carers and health workers involved as participants and who were also able to report the effects of participation on Alzheimer's patients subsequent to sessions. The data assembled is real, but difficult to submit to clinical testing, relying as it does on the judgement of participants regarding any changes or reported recall of the content of sessions on the part of people with Alzheimer's. A further issue is the 'desire to please', whereby carers and health workers had invested time and resources in bringing people with dementia to participate, and this may have influenced their objectivity in providing evaluations. Indeed, since one outcome of the project was to determine whether funding might become available for the continuation of this work, it is clear that obtaining comments that demanded scientific scepticism of participants would have been a tall order.

RESULTS

Data arising from the pilot comprised: nine hours of video recording (three hours from three camera angles); three hours of audio recording; and three questionnaires filled in after sessions by carers and health workers, where possible with the participation of those for whom they cared.

Repertoire was selected on the basis of it providing opportunities for people to participate instantly: the degree of 'teaching' required of the group leader varied. No decisions were made in advance about how much ground to cover: songs were made available, but the pattern by which a given song was introduced was allowed to arise according to judgement at the time. During the three sessions, participants worked on the following material:

- 1 A greeting game, based on melodic versions of participants' names
- 2 Simple rhythmic clapping routines
- 3 Simple rhythmic vocalization routines to act as a 'warm-up'
- 4 The game-round *First You Make Your Fingers Click*
- 5 The song *Swing Low, Sweet Chariot*
- 6 The song *Ilkley Moor*
- 7 The song *Home on the Range*

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- 8 The song *Yellow Bird*
- 9 The song *It's a long way to Tipperary*
- 10 The song *Pack up your troubles in an old kit bag*
- 11 The songs *It's a long way to Tipperary* and *Pack up your troubles in an old kit bag* combined simultaneously
- 12 The song *Edelweiss*
- 13 The song *Michael row the boat ashore*
- 14 The song *Alexander's Ragtime Band*
- 15 The round *I wanna sing*
- 16 The round *Shalom, my friend*

Many, but by no means all, of these songs are fairly slow and repetitive, and with emotive texts that dwell on peaceful subjects. The three rounds, including the new composition *I wanna sing* that would have been entirely unknown to anyone in this group, all proved singable in three or more parts; and at the end of the final session the group performed *Shalom* standing and walking around the space so that its meaning as a greeting to others present could be fully shared. This arose spontaneously because participants seemed ready to attempt it, and it felt like the right thing to do at that point.

Among responses to the sessions captured by the recording were:

- ♦ One participant with Alzheimer's found it difficult to sing words, but performed beautifully through whistling.
- ♦ Confidence grew over the three sessions, with a traceable development in the alertness of many of the people with Alzheimer's and a clear increase in volume and resonance in the singing.
- ♦ It proved possible to teach an unknown song.
- ♦ It proved possible to divide the group so as to sing two songs simultaneously, and also so as to perform three- and four-part rounds.
- ♦ Participation benefited from participants' social interaction, eye contact etc., made possible through sitting in a circle.
- ♦ Progress was made swiftly, as the repertoire list illustrates.

Initial reflections to the first session of the pilot thus suggest that group singing may have clear benefits for carer-patient relationships and for providing a varied channel of communication between them;

and as a means of patients' engaging effectively with strangers (such as, for instance, the session leader).

Session 2 (N = 21)

There were seven additional people who came for the first time to this session (two pairs of carers and one person with

dementia). They did not come back to the last session – one pair because of a family funeral; and the other because the carer felt his wife, who had Pick's disease, seemed to derive no benefit. One person with dementia and epilepsy who lives alone came for this session but not the last. One member of the public dropped out this time. Two members

Questionnaire responses Session 1

Questionnaire results (N = 25) included comments such as:

Were you surprised in any way?

Yes – 23 No – 1

Comments on above: 'Singing so well with group', 'Everyone enjoyed it', 'How much everyone joined in', 'More interesting than I thought it would be', 'Much better than I expected', 'Yes – at how well the group sang together from the start', 'Much more enjoyable even than anticipated', 'Better than I expected', 'Pleasantly', 'In how everyone joined in' (x2), 'By the way everyone relaxed and joined in', 'Agreeably so', 'At the rapid cohesion of the group and the development achieved', 'Only how bad my voice is!!!'

Other questions included:

[to all participants]

Did you enjoy the singing?

Lots 21 Somewhat 3

Did singing make you feel more lively?

Yes 22 No 1

Enjoy the variety – humming, chanting?

Lots 20 Somewhat 4
A bit 1 Not at all 1

Would you like *Singing* to continue?

Yes 23 No 1

[to carers/health workers]

Did your companion seem to enjoy it?

Lots 13 Somewhat 2
A bit 1 Not 1

Did your companion become more lively?

Yes 16 No 1

Have you enjoyed socialising with your companion?

Yes 17 No 1

Questionnaire responses Session 2

Did you feel more alert/positive during the remainder of last Tuesday?

Yes 20 No 0

Did your companion seem more alert/positive as well?

Yes 16 No 0 N/A 5

Did you feel pleasantly tired at bed time?

Yes 11 No 2 Don't recall 8

Did your companion seem to feel pleasantly tired at bed time?

Yes 6 No 1 Don't recall 6 N/A 8

Did you try out any singing at home during the week?

Yes 16 No 5

(continued)

of interested organizations came for this session only. These people filled out a questionnaire from the first session.

Session 3 (N = 22)

One couple did not come a third time.

DISCUSSION

In considering this data in the light of the original research questions posed for the study, it became clear that people with Alzheimer's are able to participate in group singing; indeed, they seem ready to do so with few inhibitions. Their contribution would certainly seem to depend on the equal participation of carers, both where these are life partners and where they are health professionals. A noticeable feature of the nature of this participation was, though, an almost total absence of the kind of 'standing in for' or 'making up for' the perceived inability of the individuals with Alzheimer's: activities in the project set out to prevent such a patronising style of engagement on the part of carers being evident.

This would appear to have been both because one of the protocols was that the musical leader would not have any information that would distinguish who was who; and also because participants with Alzheimer's made a real contribution of their own volition. The best example of this was our whistler, whose musical contribution was perfectly tuned and in time. But the evidence of the video and audio is that the singing of the group became more confident, louder and more resonant over the three weeks of the sessions, and this is attributable at least in part to the vocal contribution of the participants with Alzheimer's. This impression is consistent with comments in the Session 3 questionnaire data: 21 (out of the 22 present) felt an increase in vitality through these sessions; 17 felt that their voice seemed to get stronger through the sessions; and 17 were surprised at how well they learned new songs. Even after the second session, 16 out of 21 participants had reported practising the material from the very first session at home during the week.

By their own admission, progress was identifiable in participants' singing. Greater vocal challenges were surmounted, such as singing *Pack up your troubles* and *Tipperary* simultaneously, singing *Shalom* as a round while processing, or singing the unfamiliar three-part round *I wanna sing*.

Questionnaire responses Session 2 (continued)

Were you looking forward to coming to sing today?

Yes 20 No 1 (*man with dementia*)

Do you enjoy the opportunity to chat/make new friends before the singing?

Yes 21 No 0

Did you enjoy the singing today?

More than last week 8
The same as last week 13
Less than last week 0

(*two men with dementia replied that they had liked it more than last week*)

Did your companion seem to enjoy it too?

More than before 7 The same as before 6 Less than before 0 N/A 8

What did you enjoy most this time?

'Learning new songs', 'Singing' × 4, 'Singing and meeting people' × 4, 'Companionship – a friendly group with humour and purpose' (professional carer), 'Old songs', 'Shalom', 'New songs and rehearsing from last week' (family carer), 'Community singing from song sheets' (ex-carer helpers), 'Learning Shalom and singing the other songs and singing in the round' (family carer), 'Singing the songs' (man with dementia), 'All of it'.

What did you enjoy least this time?

'N/A' × 4, 'I enjoyed everything' × 3, 'Enjoyed all', 'Nothing' × 2 'Trying to remember the words' (ex-carer helper), 'High notes' (carer), 'Not noticed', 'Dooby doo bit in *I want to sing*' (worker), 'No difference', 'I enjoy everything we do, it's great fun' (carer).

Was it easier to remember new songs than when we first sang them last week?

Yes 16 No 1 Same 2 Some 1 No reply 1

Any further thoughts on how we could improve the sessions?

'No, it's excellent', 'Very good as now', 'No, very good', 'All works well, I really look forward to coming', 'No, it is all quite excellent', 'I will continue to do better' (same man with dementia who didn't look forward to coming), 'More familiar songs' (worker), 'By getting the sessions to continue' (ex-carer helpers).

Questionnaire responses Session 3

How do you feel about weekly singing – possibly a school year pattern (three terms of five weeks, then a week off, then five weeks, but two weeks off for Christmas and Easter with a long break in summer – about 30 weekly sessions per year)?

Would this be: wonderful 14; manageable 3; a bit much 2 (1 carer, 1 worker); much too much 2 (ex-carer helper, person with dementia), Prefer 'monthly or fortnightly with lunch' (professional care workers), 'three terms of five weeks' (ex-carer helpers).

Do you like starting late morning as now ?

Yes 21 No 1 (ex-carer helper)

Would you like a video compiled from the three sessions to remind you of the singing? – There is a trust who might help us afford to produce this provided everyone agrees. [Question modified verbally after speaking with video technician. Would you like a cassette/CD to remember the sessions?]

Yes 15 No 4 No reply 3

Did you feel an increase in vitality through these sessions?

Yes 21 A bit 1 (man with dementia) No 0

Did you feel a growing comradeship with the group?

Yes 22 A bit 0 No 0

Did your voice seem to get stronger through the sessions?

Yes 17 A bit 3 (2 persons with dementia, 1 care worker) No 1 (family carer) No reply 1

(continued)

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Questionnaire responses Session 3 (continued)

Did you find any better communication between you and your companion afterwards?

Yes 8 A bit 4 No 0 No reply 4 N/A 6

Were you surprised at how well you learned new songs?

Yes 17 A bit 2 (1 man with dementia; 1 Alzheimer Society Representative) No 3 (2 men with dementia and 1 family carer).

Any other comments or suggestions?

'I think possibly once a month would be good' (ex-carer helper), 'Sorry it was our last session' (family carer), 'It was such a good experience. I never expected it. It was wonderful' (family carer), 'With saucer!' (man with dementia), 'An enjoyable session again – well presented and organized, and everyone made to feel so welcome and that everyone has something to offer' (professional care organizer), 'A video is a nice idea but audio is better really, I think', 'Very enjoyable. Excellent venue. Right period – 1 hour. Very good welcoming atmosphere. Could have singing session at carers' meeting 3/12' (ex-carer helpers).

The majority of responses to the activities presented were positive, and this continued to be so long after the three sessions were completed. CDs of the songs recorded were circulated some months later, and several carers reported that listening to these elicited continued active participation. This represented one way in which participating carers found the pilot project worthwhile.

Perhaps the most interesting feature of the project that needs addressing in future research is the illustration that people with Alzheimer's proved capable of responding to, and learning to participate in, a song that they could never have encountered before. Assumptions about communication are so dominated by dependence on speech that it

may appear surprising that vocal expression can be engaged in, where the linguistic element is subordinated to musical and aerobic activity. Exactly how this is achieved, and what its true potential in gerontology might be, was beyond the scope of this pilot to investigate.

CONCLUSIONS

In subsequent discussion of the *Singing for the Brain* pilot sessions and the regular sessions that have been held since led by Liz McNaughton, a set of questions has emerged which need to be addressed in future research. These include:

- 1 What are the neurological features of participation in group singing?

- 2 How might participation in group singing provide a stimulus to the neurological processing of the person with dementia which might contribute to quality of life?
- 3 How might participation in group singing contribute to the social relationship between people with dementia and their carers?

There are difficulties – ethical and practical – in obtaining data from people with Alzheimer's, both in subjecting them to activities that they might not enjoy; and in devising experimental methods that employ brain-scanning techniques or other comparable clinical procedures. One important issue in researching *Singing for the Brain* is that it is essentially a group activity wherein it is difficult within the collective endeavour to be certain how the overall effect arises from the interaction of individuals.²² Nevertheless, it is the overall effect that is unique about the experience, in comparison with the very different nature of one-to-one music therapy on the one hand, or subjects' listening to recorded music on the other.

The holistic, tangible nature of group singing depends on the survival of channels of musical and social intelligence on which participation depends. These seem to outlive the verbal and logical domains that so easily represent the means by which we label people as active, social beings.

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