

A CHOIR IN EVERY CARE HOME

A REVIEW OF RESEARCH ON THE VALUE OF SINGING FOR OLDER PEOPLE

WORKING PAPER 6

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'A Choir in Every Care Home' is an initiative to explore how music and singing can feature regularly in care homes across the country. Funded and initiated by the **Baring Foundation**, it is a unique collaboration between 30 leading national organisations from adult social care, music and academic research. It is led by **Live Music Now**, **Sound Sense** and **Canterbury Christ Church University**.

The Baring Foundation



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About A choir in every care home

This enquiry is an initiative of the *Baring Foundation* which since 2010 has focused its arts programme on older people, especially those in care homes. Following a roundtable discussion in October 2014 the Foundation decided as a first step to undertake a short-term investigation into singing in care homes which would:

- Collate the existing evidence for the benefits (for staff, family and friends, choir members as well as residents) of singing/choirs for older people/in care homes/links to the wider community.
- Map existing activity
- Explore different models of activity: benefits, challenges and ways forward
- Collate existing materials that support choirs in care homes and produce new materials where needed.
- Consider issues of quality of the artistic experience and art achieved, with special reference to dementia
- Describe what more can be done without extra resources and cost what more activity could be achieved with further resources.
- Launch and widely disseminate this work in a way that will encourage the greater use of choirs in care homes.

Following an open application process a consortium of three organisations, led by Live Music Now, was awarded funds to carry out the investigation.

Our working approach

The worlds of singing, arts and wellbeing, and care homes are all well understood by a wide range and large number of organisations working at both practical and policy levels. These organisations – nearly three dozen at the last count – not only know about the subject, the results of this enquiry matter deeply to them. No investigation could successfully research the issues – nor, crucially, be able to “disseminate the findings in ways that will encourage the greater use of choirs in care homes” – without genuine buy-in from these organisations.

Our working approach therefore invites these organisations to form not a steering group, but a *working* group that shares and learns from each other, that determines work that needs to be done – and that then is involved in carrying it out.

Compared with conventional practices of evidence-gathering and recommendation generating, our approach:

- involves the sector fully from the start – so they own the solutions
- makes full use of the knowledge, expertise and experiences in the sector – it is efficient
- creates a community of practice that is worthwhile in its own right – so leaves a legacy
- creates solutions already agreed by the sector – so are much more likely to be adopted.

About working papers

Our working papers distil the sharings and emerging learnings of both the working group and the consortium, to provoke further debate and discussion. They are subject to change as the initiative develops. Together, they form the evidence for our actions and recommendations for future work. A list of proposed working papers is on the outside back cover.

Cover image



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Summary

- S.1** This review on the value of singing for older people was conducted as part of a wider enquiry – *A choir in every care home* – into the role of group singing in care settings funded by the Baring Foundation.
- S.2** Since the late 1990s there has been a considerable growth of research on the psychological, **social** and physical effects of group singing and much of this research has focused on the value of singing for older people, particularly in community settings. An increasing body of research has also explored the value of singing for older people with long-term health conditions.
- S.3** Important **research** contributions have also been made to the value of singing for people in care and particularly with dementia across a spectrum from mild to advanced stages of this condition.
- S.4** Alongside the development of research evidence on the value of singing for wellbeing, the last fifteen years **has** seen a considerable growth of organisations and initiatives directly promoting the provision of group singing for older people. Many of these initiatives document the value of the activity through testimonials and short films. This growth of provision has been supported to some extent through evaluation and research, but in the main has occurred despite a lack of robust scientific evidence of benefits, entirely on the basis of positive experiences and feedback through practice.
- S.5** To assist in identifying research on singing and older people, relevant to this review, a review of previous reviews in three areas was undertaken: reviews of singing and health; reviews of music therapy **interventions** for people with dementia, and more general reviews of creative arts interventions with older people. Many of these reviews identify weakness in the existing corpus of research, and argue for larger-scale, more controlled studies. There is also a need to develop theoretical frameworks for understanding the key processes involved in effective singing (and creative arts) interventions and the mechanisms through which musical engagement leads to wellbeing and health benefits.
- S.6** Taken as a **whole**, research on group singing for older people shows convincingly that singing can be beneficial for psychological and social wellbeing. In addition, it may have a role in helping people to manage a wide range of health issues, including mental health challenges and physical health problems associated with chronic respiratory illness and Parkinson's. It is clear also that singing activity can positive engage people with dementia across a spectrum of severity from mild to late-stage.
- S.7** Important common sense qualifications to this general consensus are that singing is entered into voluntarily; there is skilled delivery of sessions, and content of singing programmes reflect the interests and musical tastes of participants.
- S.8** The findings from this review, together with the additional activities of *A choir in every care home*, provide a sound foundation for developing a second stage of work to promote wider implementation of group singing activities in care settings across the UK.

1 Introduction

1.1 The scope of the project

The focus of *A choir in every care home* is to explore how the lives of older people in care settings could be improved through singing. In essence, the vision is to create a nation of singing care homes. For full details, see the inside front and back covers.

The remit from the Baring Foundation included collating the existing evidence for the benefits of singing/choirs for older people/in care homes/links to the wider community; and this report, produced for the project by the Sidney De Haan Research Centre for Arts and Health, focuses specifically on this topic. It provides an overview of the growing body of research evidence on the value of singing for wellbeing and health. The Centre is well placed to produce such a review given the contributions it has made since 2001 to the growing international research literature on this subject (See Clift, 2015, for an overview).

1.2 The field of creative arts for health and wellbeing

The focus here is on the value of singing for older people, and particularly older people in care settings, but it is important to recognise that singing is one musical activity among many forms of engagement with music. Others include playing instruments and listening to music, and such activities may also have benefits for older people. Furthermore, music is one art form among many – including dance, drama, visual arts, creative writing, reading, films, modelling, crafts etc. and all of these activities may offer different but related benefits. The factor of personal preferences and interests must always be taken into account here – for some older people, singing may appeal, but for others their preferences may be for other forms of creative engagement. The Baring Foundation (see references) has long had a special interest in the place of creative activity in the life of older people and the complete palette of possibilities is well represented in their reports.

Creative arts activities also have considerable potential benefits for participants in promoting health and wellbeing across the whole of the life course and for children, young people and adults with challenges to their health and wellbeing, both physically and mentally. Clift and Camic (2015) survey the international interest in this field, with the arts contributing the health and wellbeing in different populations, in different settings (e.g. schools, hospital, prisons etc.) across the whole of the life course. Two specialist journals for arts, health and wellbeing research were also established in 2009: *Arts & Health: An international journal for research, policy and practice* and *Applied arts and health*. Increasingly too, mainstream health journals publish research on arts and health (eg *Perspectives in public health*, *Public health*, *Public mental health*).

Clift and Camic (2015) also document the growth in national and international conferences in the field of arts and health where researchers and practitioners come together to share experiences in this dynamic and growing field. Recent events of particular importance include a conference organised by the Royal Society of Public Health in October 2015 to launch a new Special Interest Group for researchers in the field of arts, health and wellbeing. The aim of this group to promote the role of robust evaluation and research in establishing arts interventions for health on a secure evidence base (Clift, 2012). In addition, the Arts Enterprise with a Social Purpose (Aesop: see references) organisation ran the first national arts and health conference and showcase for health decision-makers at Southbank Centre in February 2016. This presented 24 creative arts for health initiatives with one of the four strands focusing on the value of arts participation for older people.

1.3 The value of music and singing for health and wellbeing

There is a strong case for claiming that singing as an activity has a special human significance that has deep evolutionary roots. Mithen (2010) in his book *The singing Neanderthals* argues that singing as a form of communication may have developed prior to the spoken word, and provided an evolutionary foundation for the emergence of language. It is clear that early communication between babies and carers has a musical song-like character, and it is also of considerable significance that where language fails, due to neurological injury or in later life as a consequence of dementia-related conditions, music and song can remain intact as forms of vocal expression and communication. The distinguished neuropsychologist Teppo Sarkamo says the following about music:

Neurologically, music is a complex and multi-dimensional stimulus for the brain that not only activates auditory regions, but engages a wide network of temporal, frontal, parietal, cerebellar, and limbic regions. Studies have also indicated that music has the capacity to induce long-term plasticity in the brain, and it is possible that this expansive stimulation of the brain in response to the musical experience may begin to explain the powerful effect of music on improving emotional and cognitive functions in dementia. The capacity of music to evoke emotions and influence mood is often preserved, even in the later stages of dementia. Musical interventions can therefore provide a unique and useful tool for stimulating and maintaining emotional, cognitive, and social functioning of people with dementia. Sarkamo et al (2012).

The deep biological significance and character of music-making is reflected in the work of one of the greatest singing teachers of our time - Janice Chapman. In her book *Singing and teaching singing* (2006:3-4) she talks of 'Primal Sound':

When performers and listeners are 'in the zone' they have a reciprocal empathy. Whether in the concert hall or the village hall, time stands still and the experience imprints on the memory. Singers and audience are drawn into a web of shared concentration that is greater than any of its individual parts... In my paper *Primal Sound-making connections* (1990) I argue that the singing voice emanates from a connection with the need to survive. Thus sound is called primal and cannot be achieved without the natural interaction of body, mind, and spirit.

Chapman goes on to explain the relevance of primal sound, the very essence of how human beings communicate at our most primitive level (2006:17-18):

Human babies make primal sound, as do primates and other mammals. Primal sounds emanate from our human needs, have emotional triggers, and are part of a whole pattern of responses involving the body and mind in a holistic way. For example, if someone stamps on my foot, I respond 'aagh' and without thinking about the vocal mechanism; it is part of a neurological link to the vocal mechanism... and the emotional mechanism... A baby can cry for hours without suffering vocal fatigue because its cries are vocally efficient, being produced with full body activation. A singer who is connected up can sing with the same sort of vocal efficiency.

In her practice, Chapman uses these primal sounds for crying, howling, laughing, groaning, calling and exclaiming to achieve that vocal efficiency in producing the professional singing voice and, on top of this technique, adds artistry, which connects emotionally with the singer and audience. Therefore, if singing and its technique is implicit in our primal method of communication and our emotional connectivity, this could explain why singing more so than music per se, or other arts forms, can create such strong impacts..

Singing also involves the whole body as the instrument, with posture playing an important role for good breath and vocal control. Posture is also important for less obvious reasons. Research by Carney, Cuddy and Yap (2010) shows that strong, open postures elevate testosterone, decrease cortisol, and increase feelings of power. Simply assuming a powerful posture can induce psychological, physiological, and behavioural changes and

promote better management of stressful situations and improved confidence. In time this could potentially improve a person's general health and well-being.

The power of music and the way it can become a key reference point for people in their lives, is well-documented by BBC Radio 4's *Soul music*. This programme has run for several years and Box 1 gives the pieces of music covered. It is remarkable that most of these are songs, so clearly it is not simply a matter of the music itself, but also the words set to the music, that has such evidence power to move and affect people emotionally, and connect in meaningful ways with life events.

Box 1: BBC Soul Music – an insight into the power of songs

Soul Music is a long-running BBC Radio 4 series which profiles music with a strong emotional impact. For far 21 series have been broadcast focusing on over 150 pieces of music. In each people talking about the impact that the selected music of their lives. The music featured covers the whole spectrum of genres and styles, but what is striking is the range of vocal and choral music:

Classical choral – *Beethoven Ode to Joy, Handel Zadok, Tallis Spem in Alium, Allegri Miserere, Faure Requiem, Handel Hallelujah Chorus; Pergolesi Stabat Mater; Bach St. Matthew Passion, Elgar Dream of Gerontius, Brahms German Requiem*

Classical opera – *Puccini La Boheme, Bretch/Weill Mack the Knife*

Classical solo – *Strauss Four Last Songs, Purcell Dido's Lament, Schubert Winterreise, Butterworth Shropshire Lad*

Prayers – *Kol Nidrei*

Hymns and carols – *Silent night, Amazing Grace, I Vow to thee my Country, Praise My Soul, How Great Thou Art, Dear Lord and Father of Mankind, Gresford, the Miners' Hymn, Make Me a Channel of Your Peace, The Lord is My Shepherd*

Spirituals – *Swing Low Sweet Chariot, Ol Man River, He's Got the Whole World in His Hands, Nkosi Sikelel' iAfrika*

Folk/traditional songs – *The Skye Boat Song, She Moved Through the Fair, Myfanwy, Scarborough Fair, Sukiyaki*

Songs from musicals – *You'll Never Walk Alone, Summertime, Somewhere, New York New York, Send in the Clowns, Bring Him Home*

Songs from films – *Over the Rainbow, Moon River, Mad About the Boy, Let's Face the Music and Dance, Have Yourself a Merry Little Christmas, The Way You Look Tonight, Feed the birds*

Popular soul/rock/pop/country/jazz – *Bridge over troubled water, Ev'ry Time We Say Goodbye, Fever, Like a Rolling Stone, Stand By Me, Tainted Love, You've Got a Friend, The Look of Love, What a Wonderful World, The Impossible Dream, Baker Street, Wichita Lineman, Brothers in Arms, Non, Je Ne Regrette Rien, Ship Building, Is That All There Is? Can't Take My Eyes Off You, Strange Fruit, Don't Leave Me This Way, Lili Marlene, Something Inside So Strong, Crazy, Hallelujah (Cohen), There's a Light That Never Goes Out, Gracias A La Vida, Plaisir armour/Can't Help Falling in Love with You, Mr Blue Sky, First Cut is the Deepest, Fairytale of New York*

1.4 The recognition of music and singing in national policy and guidance

If the value of music and especially singing is to be promoted more widely in the context of care, the evidence for its value needs to be recognised through the vehicles of national policy development and guidance on best practice.

Spiro, Farrant, and Pavlicevic (2015), for example, discuss the goals encapsulated in the UK Department of Health document, *Living well with dementia: a national dementia strategy* from the perspective of music therapy practice. They argue that both music therapy practices and government strategies on dementia care may benefit from being mutually informed.

Even more pertinently, the National Institute for Health and Care Excellence (NICE, 2015) has published guidelines for the independence and wellbeing of older people. The first tool it highlights for this is group-based activities and the value of 'singing programmes, in particular, those involving a professionally-led community choir' followed by other 'arts, crafts and creative activities'. Thus, the values of singing for the wellbeing of older people has been formally recognised by this national body as supported by robust evidence. The rest of this report will document the details of the evidence base that justifies this conclusion.

1.5 The approach adopted in this review

As noted above, the Sidney De Haan Research Centre for Arts and Health has been at the forefront of developing the evidence base on the potential value of active engagement in singing for wellbeing and health. Since the late 1990s it has created a repository of research in this field; networked actively with researchers in this field internationally, undertaken two reviews of the developing literature and pursued a wide range of original empirical studies with a particular focus of older people with enduring health issues.

For the purposes of this review, use was made of the existing database of research held within the Centre, but further searches were undertaken through online bibliographic sources such as Medline and Psychinfo with search terms: older people, singing, health, wellbeing and care. These searches were supplemented by use of Google Scholar and Researchgate to search for sources on singing and wellbeing. An examination of sources cited in recent publications was made to locate additional material. In addition, in the course of preparing this report, new reports continued to be published and information was provided via enquiries directly from researchers active in the field of music and health.

As the topic of singing and wellbeing has attracted increased attention since the late 1990s, so a number of literature reviews have appeared to critique and synthesise existing evidence. In addition there are increasing numbers of reviews focused on the health and wellbeing of older people, and attention was given to a number of recent reviews on musical interventions to address the wellbeing and care of people with dementia. These reviews will be drawn upon to identify the most substantial studies of singing and older people conducted to date up to 2014. Additional searches and personal contacts have identified more recent substantial studies. These include:

- A randomised controlled trial on singing and mental wellbeing involving older people living independently who have not sung previously (Coulton et al., 2015)
- A study on the value of singing for people affected by cancer, including biomarkers for wellbeing and immune function (Fancourt, et al., 2016)

- A randomised controlled trial on singing and depression among adult people in day care and residential care settings (Ahessy, 2015)

The concern here is not to comprehensively review all of the available research on singing, wellbeing and health. Partly, this not necessary given the number of reviews of this literature that are available (see Section 2 for a review) and additionally, it would involve taking space to discuss studies which are of limited direct relevance to the role of singing with older people and in care settings (e.g. research on the value of singing for children and young people. See the work of Welch for an excellent overview of research on singing with children (Welch et al. 2014) and a 2015 lecture at Gresham College: (see references).

1.6 **Being grounded in on-going practice**

Before we consider the findings from research, it is important to recognise that the idea that singing promotes wellbeing and health is widely accepted in practice. Across the UK, the last fifteen years has seen a proliferation of singing for wellbeing initiatives.

Whatever the shortcomings of the research evidence identified below and whatever the degree of caution that researchers wish to attach to their findings, the fact remains many organisations and care settings provide opportunities for older people to sing. Filmed testimony from older people participating in such 'singing for health' groups amply endorse the value of regular singing for their wellbeing. Such groups would not survive and flourish if this were not the case.

Here are a few examples of initiatives which provide films of their work (see section 5.2 for details):

- Sing Your Heart Out – singing for mental health
- Singing for Better Breathing – singing for people with COPD
- Tenovus Cancer Care Choirs – singing for people affected by cancer
- Sing for Your Life – Silver Song Clubs for people affected by dementia
- Sing to Live, Live to Sing – Singing for health and wellbeing
- Goldies – the Sing and Smile Charity
- Singing for the Brain – Alzheimer's Society

2 Singing, Wellbeing and Health: Review of reviews

2.1 Introduction

To date a number of narrative and systematic reviews have been undertaken of the literature on singing and health. These will be considered in the order of publication, and the principal conclusions presented (see Table 1). Attention will then be given to reviews on interventions for people with dementia (Table 2), together with a number of additional reviews on arts interventions for older people, and a review of the neurochemistry of music (Table 3). In each table, information is given on date, the nature and scope of the review, whether a quality screen was applied, the number and detail of the sources reviewed and finally papers included in the review which focus on: older people in community singing groups (both existing choirs and specifically established groups); older people with health issues involved in singing, and older people in care settings involved in singing. As the review literature has developed, reviews have become more systematic and critical, with increased attention to the quality of the research considered. The early reviews attempted to map the developing literature and endeavour to capture all published research, whereas later reviews are more discriminating and focus only on studies considered to be robust enough to provide evidence that is reliable, valid and free from bias. Thus, while the earliest reviews (Clift et al. 2008, Clift et al. 2010) consider 34 and 48 studies respectively, the most recent review (Raegon et al. 2016), selects only 18 papers for review.

The reviews focused on music therapy for older people and people with dementia are also of interest as they consider the wider field of musical interventions and their benefits and are generally highly discriminating with respect to research quality. Within the corpuses identified, only a few studies specifically address the benefits of singing interventions. Nevertheless, the stringent processes of review involved provide some confidence that the conclusions drawn from these studies are relatively robust, even given some of the methodological qualifications that might be made.

The reviews will be considered for the general conclusions drawn and the studies of older people identified. In total, they serve to identify the most substantial and robust studies providing evidence on the benefits of singing for older people published up to the middle of 2014. These studies, together with additional substantial research not captured by these reviews, and studies appearing since the middle of 2014 will form the basis for the review presented in Section 3 of this report.

2.2 Previous reviews of singing, wellbeing and health

2.2.1 *De Haan Centre reviews*

The first three reviews listed in Table 1, written by members of the Sidney De Haan Research Centre for Arts and Health, appeared in 2008 and 2010. A further three reviews then followed in 2012, 2015 and 2016 which focus on the Centre's research output.

From its inception in 2005, the De Haan Centre has pursued a research programme on singing, wellbeing and health to determine whether singing as an activity could reasonably justify public funding and promotion through the health service (i.e. singing on prescription). The starting point for the Centre's work was an early exploratory study of the perceived benefits of singing among members of one university choral society (Clift and Hancox, 2001). This is one of the earliest studies to address this issue in the peer-reviewed academic literature, and it is one of the most widely quoted studies in the field. A Google Scholar search at the time of writing indicates it has been cited 227 times.

The De Haan Centre regarded systematic and critical reviewing of available research on singing for health and wellbeing as an essential exercise. Reviews seek to consolidate what has been learned through research, identify short-comings and identify directions for further more robust studies.

Table 1: Reviews of research on singing, wellbeing and health

Authors	Form of the review	Scope of the review	Quality screen	No. of papers/studies	Key studies of older people and singing 2000 onwards
Clift et al. 2008	Systematic mapping search of nine databases, manual searches and author contact	Studies of group and solo singing in non-clinical populations	Screening for quality using bespoke rating scales. All papers identified included and critically reviewed	Thirty-four papers reviewed	Hillman 2002 Cohen et al. 2006, 2007
Clift et al. 2010	Systematic mapping search of four databases, manual searches and author contact	Studies of group singing in non-clinical and clinical populations	No formal screening for quality. All papers identified included and critically reviewed	Fifty-one papers reporting on 48 studies reviewed	Groene 2001 Brown, Gotell & Ekman 2001 Hillman 2002 Kenny & Faunce 2004 Engen, 2005 Lesta & Petocz 2006 Svandottir & Snaedal 2006 Gianquinto et al. 2006 Cohen et al. 2006, 2007 Clift et al. 2008, 2009, 2010a,b Myskja & Nord, 2008 Bannan & Montgomery Smith 2008 Bonilha et al. 2009 Di Benedetto et al. 2009
Skingley & Vella-Burrows 2010	Systematic mini-review approach based on a search of two databases and three previous reviews. Clear inclusion and exclusion criteria	Studies on the therapeutic effects of music and singing for older people	No formal screening for quality	Sixteen papers identified categorised as: experimental, quasi-experimental, case-control and non-intervention.	Gotell et al. 2002 Cohen et al. 2006 Bungay & Skingley 2008
Wan et al. 2010	No details provided of the search strategy adopted	Studies on the therapeutic effects off singing in neurological disorders: stuttering, Parkinson's, aphasia and autism	No formal screening for quality, but with critical commentary on studies included	No information on number of papers considered in total from which selection made. Physiological effects 2, pulmonary function 1, stuttering 4 Parkinson's 2 aphasia 5 autism 2 with only two papers concerned with group singing for people with long-term conditions	Bonilha et al. 2009 Di Benedetto et al. 2009

Authors	Form of the review	Scope of the review	Quality screen	No. of papers/studies	Key studies of older people and singing 2000 onwards
Irons et al. 2010	Cochrane review search following Cochrane protocols	Studies on singing for children and adults with cystic fibrosis	Screening following Cochrane protocols	No randomised controlled trials identified	N/A
Grindley et al. 2011	No details provided of the search strategy adopted	Studies on the health and especially mental health benefits of singing	No formal screening for quality, but with critical commentary on studies included	No information given on number of papers considered total from which selection made. Papers on singing and health reviewed, 12	Hillman 2002 Kenny & Faunce 2004 Cohen et al. 2006 Clift et al. 2007
Irons et al. 2011	Cochrane review search following Cochrane protocols	Studies on singing for children and adults with bronchiectasis	Screening following Cochrane protocols	No randomised controlled trials identified	N/A
Gick 2011	Review based on a search of four databases and Google plus manual searches of references in papers identified.	Studies on singing, health and wellbeing structured within a biopsychosocial framework	Inclusion and exclusion criteria specified with focus on studies with a health or wellbeing outcome	Review organised in terms of biological, psychological and social outcomes.	Hilman 2002 Unwin et al 2002 Kenny & Faunce 2004 Engen 2005 Giaquinto et al 2006 Cohen et al. 2006 Clift et al. 2007 Bannan & Montgomery-Smith 2008 Magill et al 2008 Satoh & Kuzuhara 2008 Bonilha et al 2009 Skingley & Bungay 2010
Clark & Harding 2012	Systematic review search using six databases	Studies of psychosocial outcomes of active singing interventions for therapeutic purposes			Kenny & Faunce 2004 Takahashi & Matsushita 2006 Lesta & Petocz 2006 Myskja & Nord 2008 Bonilha et al 2009

Authors	Form of the review	Scope of the review	Quality screen	No. of papers/studies	Key studies of older people and singing 2000 onwards
Clift 2012	Review of research on singing, wellbeing and health in MacDonald, Kreutz & Mitchell 2012	A discursive review of the existing literature	N/A	Fifty-four research reports on singing, wellbeing and health reviewed	Kenny & Faunce 2004 Engen 2005 Cohen et al 2006, 2007 Giaquinto et al 2006 Svansdottir & Snaedal 2006 Bungay & Skingley 2008 Myska & Lord 2008 Bonilha et al 2009 De Benedetto et al 2009 Clift et al 2009 Lally 2009 Southcott 2009 Bungay et al 2010 Clift & Hancox 2010 Clift et al 2010 Lord et al 2010 Skingley & Bungay 2010
Eills 2014	Systematic review based on a search of four databases up to early 2011 together with manual search of reference lists in eligible articles	Research on music and singing to help manage anxiety in older people	No screening process described	Sixteen sources identified for the review	Lesta & Petocz 2006 Cooke et al. 2010 Skingley & Bungay 2010
Clift et al. 2015	A selective review of recent research in Clift & Camic, 2015	Research on singing, wellbeing and health with a focus on people with long term mental and physical health issues	N/A	Twenty-three sources included	Bonilha et al. 2009 Lord et al. 2010 Lord et al. 2012 Goodridge et al. 2013 De Haan Centre publications, 13 – key studies: Bungay et al 2010 Clift & Hancox 2010 Clift et al. 2009 Morrison et al 2013 Skingley & Bungay 2010 Skingley et al. 2014

Authors	Form of the review	Scope of the review	Quality screen	No. of papers/studies	Key studies of older people and singing 2000 onwards
Gick & Nicols 2015	Discursive review with studies identified from previous reviews and reference lists plus searches of three databases	Research studies on singing for breathing with particular focus on asthma and COPD	No screening process described	Twenty-one studies on singing and breathing	Engen, 2005 Bonilha et al. 2009 Lord et al. 2010 Skingley et al. 2010 Lord et al. 2012 Morrison et al. 2013 Goodridge et al. 2013 Clements-Cortes, 2014 Skingley et al. 2014
Reagon et al. 2016	A systematic review search of 12 databases	Effects of group singing on health related quality of life	Formal screen for quality using the Critical Appraisal Skills Programme tools	Literature search identified 573 papers from which 18 were included	Gottell et al 2002 Hillman 2002 Kenny & Faunce 2004 Engen 2005 Giaquinto et al 2006 Bannan & Montgomery-Smith 2008 Bonilha et al 2009 Clift & Hancox 2010 Gale et al. 2010 Lord et al. 2010 Camic et al. 2011 Elefant et al. 2012 Lord et al. 2012 Shih et al. 2012 Goodridge et al. 2013 Morrison et al. 2013 Tampin, Baker, Jones et al 2013

Clift, et al. (2008) and Clift et al. (2010) report systematic mappings of the literature on singing and wellbeing. Their approach is not a systematic review as generally understood as they do not exclude any papers on the basis of a quality screen as is usual practice. Nevertheless, careful attention is given to issues of research design and robustness. This was justified given the early stage of development of the field and the concern was to demonstrate the growth and nature of studies on this topic. In the 2008 review an explicit, documented search strategy was adopted utilising nine data-bases, together with attention to the references in all sources identified and contact with authors to request information of further studies not yet published. A total of 34 papers was identified for this review and these were categorised as follows:

- Qualitative research on experience and benefits of singing
- Survey of singers using specially constructed questionnaires
- Quantitative studies using previously validated psychological measures
- Quantitative studies using objective biological measures
- Quantitative studies using standardised physical and mental health measures
- Quantitative studies using objective physical function measures
- Epidemiological studies assessing choral singing as a health determinant

These categories continue to be useful in thinking about the range of research approaches adopted in singing for wellbeing research, and will be drawn upon in structuring the review in Section 3.

Clift et al. (2008) offer a useful summing up of the principal contributions made to the research literature at the time of their review. Of the studies referred to only the Hillman (2002) study in Scotland and the Cohen et al. (2006, 2007) study, conducted in the United States, have a specific focus on older people. The Cohen research will be considered in more detail in Section 3:

Bailey and Davidson (2002, 2005) have shown powerfully that amateur group singing can have benefits for participants across a wide social spectrum – from homeless men singing together, to middle class singers in traditional choral societies

Clift and Hancox (2001) have begun to explore in more detail the range of benefits experienced by choral singers, and have identified empirically a number of key dimensions of benefit which can be measured

Beck et al. (2000) Grape et al. (2002) and Kreutz et al. (2004) have begun to explore the possible physiological mechanisms which could underpin subjective experiences of both individual and choral singing-for-breathing

Silber (2005) has undertaken a detailed analysis of the specific contributions which musical structures can make in processes of developing the social and personal wellbeing in a challenging group of women prisoners

Louhivouri et al. (2005) have linked research on choral singing to the wider issue of 'social capital' and begun to explore experiences and benefits of group singing in very contrasting cultural contexts

Cohen et al. (2006, 2007) have conducted an ambitious quasi-experimental study of the possible effects of community singing on the mental and physical health of older people

(2008:112-3)

The Clift et al. 2010 review updates the earlier review on the benefits of group singing and a structured search of four bibliographic databases, supplemented by manual searches and contact with researchers, identified a total of 51 papers reporting on 48 different projects worldwide over the period 1986 to the end of 2009. The review categorises projects under four headings:

- Qualitative and survey studies involving community singing groups / groups established in special settings
- Experimental and objective/standardised measurement studies involving community singing groups established for research purposes
- Studies of group singing as a therapeutic intervention for specific health conditions
- Studies of group singing with people affected by dementia/Alzheimer's

Findings from survey and qualitative studies generally agree in providing evidence of personal and social benefits associated with group singing:

On a personal level, singing is widely reported to be enjoyable, energising, relaxing, stress relieving, mood enhancing and cognitively stimulating. Singing also enhances self-confidence, self esteem, gives a sense of achievement and of purpose. Socially too it provides social support, friendship and a sense of community and belonging. (Clift et al., 2010:4)

Most of the survey/qualitative studies are small-scale, with the major exception of the work of Clift et al. (2009, 2010a,b) who surveyed over 1,000 choral singers in choirs and choral societies in Australia, England and Germany. This study is reviewed in Section 3.

The studies in the second category were very diverse with some employing standardised measures of mood or emotion which essentially confirm the findings from qualitative studies on the positive mood enhancing effects of singing. More interestingly, however, several studies monitored changes in physiological parameters underpinning emotions and mood. Beck, et al. (2000), Kuhn (2002) and Kreutz, et al. (2004) found significant increases in immunoglobulin A in saliva following singing, and Beck et al. found that cortisol decreased in rehearsal conditions, but increased in performance situations, reflecting the different levels of stress involved. As we will see below, a recent major study of singing for people affected by cancer (Fancourt et al., 2016) has further explored the psychophysiological changes associated with singing (and other forms of active musical engagement), with similar findings. Also in this group is the Cohen et al. (2006, 2007) study which will be considered in detail in Section 3.

The third group of studies reviewed by Clift et al. (2010) focus on group singing as an intervention for specific health conditions. The range of health problems is wide, including respiratory illness, chronic pain, depression, eating disorders, irritable bowel syndrome, Parkinson's disease and post-operative depression. A number of these conditions particularly affect older people, and increase in prevalence and severity with ageing. In Section 3, particular attention will be given to the randomised controlled trial conducted in Brazil (Bonhila et al 2009) on the value of singing for patients with chronic obstructive pulmonary disease, together with subsequent important studies on this issue. A second important study conducted in Italy with people affected by Parkinson's (Di Benedetto et al., 2009) will also be considered. A final study in this section conducted in a care setting in Norway is also of considerable interest (Myskja and Nord, 2008). Kenny and Faunce (2004) report a small-scale randomised controlled trial on the value of group singing for patients with chronic pain. Multiple measures for mood, depression and pain perception were employed, but no convincing evidence was presented that group singing helped with pain management.

The fourth group of studies in the Clift et al (2010) review concern group singing for people affected by dementia / Alzheimer's. Qualitative studies by Groene (2001), Lesta and Petocz (2006) and Bannan and Montgomery Smith (2008), all offer evidence of the benefits of group singing for this group. Of the studies reviewed, however, the most substantial is that conducted in Iceland by Svandottir and Snaedal (2006) which employs a control group and assesses effects of singing using standardised observational instruments. This study is consistently identified in subsequent music therapy reviews considered below as providing robust evidence. It will be considered in detail in Section 3.

Clift et al. (2010) offer useful reflections on the findings from their review:

It has shown that this topic has received only limited research attention, but that since 2000 interest has grown and there have been a steadily increasing number of studies, concerned both with group singing as a community activity, and as a therapeutic intervention in relation to specific health issues. Research to date has been highly variable with respect to scope, design, methods, samples and particularly the character of the singing activity investigated. Such variations make it difficult to draw any general conclusions beyond saying that there are suggestive indications that singing can help to promote a sense of personal and social wellbeing, and that it may be effective in promoting physical health. (2010:9)

As noted earlier, later reviews by Clift (2012), Clift et al. (2015) and Clift (2016) provide selective accounts of major developments in the field of singing and health, and focus in particular on the research programme of the Centre. Clift (2012) notes promising developments in the field, but cautions that further work is needed to establish a strong case of the value of singing for wellbeing and health that will command the attention of health and social care providers:

More research is needed before strong evidence-based claims can be made for the value of singing for health. The existing corpus of research on this issue lacks a common approach to health and wellbeing and little attention has been given to developing a coherent model of the mechanisms by which singing could affect health. Many studies are exploratory and involve very small samples and very few well-controlled experimental studies have been undertaken. Little attempt has been made to build a body of knowledge in a coherent way. Nevertheless, the research published so far does give promising indications in support of the hypothesis that 'singing is good for health. (2012:113)

The review considers further research with older people focused on breathing problems, Parkinson's and dementia and identified studies to be reviewed in Section 3.

With respect to the work of the De Haan Centre, this chapter highlights work undertaken with older people in association with the charity Sing for Your Life and planning for a randomised controlled trial on the value of singing for older people.

Clift et al. (2015) in a further update on research focus on the idea that singing can be considered a 'public health resource'. This points towards the need to consider the challenges of implementing the findings from research in practice and to think about necessary degrees of scale in delivery to make a contribution at an appropriate level to population health issues. As they note:

The concern of the De Haan Centre has not simply been to test the idea that regular singing can have benefits for health and wellbeing in the management and treatment of long-term conditions. We have also pursued the idea that singing can be an activity, if supported on a sufficiently large scale, that can make a significant cost-effective contribution at a public health level. (2015:251)

The authors go on to provide examples of existing singing networks and singing projects in the UK such as the Military Wives Choirs Foundation, Young Voices and Rock Choir, which provide examples of what can be achieved:

The websites for Military Wives, Young Voices and Rock Choir show the scale of these ventures and the huge number of people involved in their events.

Testimonials from participants, together with film material, clearly reveal the powerful impact that joining together in singing with others can have. (2015:251)

Clearly, the public health perspective is one that informs the *A choir in every care home* initiative.

The 2015 review and also Clift (2016) provide updates on the most recent work of the De Haan Centre and in particular findings from a community-based randomised controlled trial with older people (Coulton, et al. 2015; Skingley et al., 2015) and a feasibility study on the value of singing for people with chronic obstructive pulmonary disease (Morrison et al. 2013; Skingley et al. 2014) Both studies will be considered in more detail in Section 3.

Skingley and Vella-Burrows (2010) offer a more focused review on the therapeutic effects of music and singing for older people. Appearing in *Nursing Standard*, it is written with a nursing readership in mind and their conclusion highlights the role that nurses could play in supporting and delivering musical interventions. The paper is of particular interest when considering the health promotion role of nurses both in the community and in long-term elderly residential care:

There is growing evidence to support the benefits of music and singing to the health and wellbeing of older people. Much of the research discussed here includes implications for nursing in a variety of settings, in particular the introduction of preferred music or singing, the latter especially in the case of dementia. Less explicit, but worthy of consideration for older people living at home, may be referral by community nurses to community chorales or singing groups, especially for individuals who are socially isolated. However, there is need for further research to refine the evidence in the area of health promotion and the nurse's role. (2010:41)

With respect to the value of singing for older people, Skingley and Vella-Burrows consider both the work of Cohen (2006) and work by the De Haan Centre already picked up through the reviews considered so far, but also include reference to the important work of Gotell and her colleagues on care-giver singing (Gotell et al., 2002). Gotell's body of work will be considered further in Section 3.

2.2.2 *Wan et al*

Wan et al. (2010) provide a very focused review on the potential role of singing in therapeutic interventions for neurological conditions which affect the production, fluency and intelligibility of speech. No details are provided of the search strategy followed or whether an initial screening using inclusion and exclusion criteria was applied. Nevertheless, the coverage appears comprehensive and the approach adopted is analytical and critical. Four conditions are considered: stuttering, aphasia, Parkinson's and autism, and most of the studies discussed have limited relevance to the concerns of this review. The therapeutic interventions described generally operate on an individual level in the context of speech therapy, clinical treatment or rehabilitation, rather than on a group basis. However, two studies identified in the Clift et al. (2010) review are included (Bonilha et al., 2009 and Di Benedetto et al., 2008) and these will be discussed below.

Wan et al. offer some interesting concluding reflections on the role of singing as 'a therapeutic tool in a variety of neurological disorders' and while they do not consider dementia in their paper, a number of their speculations on 'the mechanisms underlying the

efficacy of singing' have some relevance to understanding why singing appears to be an engaging and positive activity for people with dementia:

Singing is particularly useful in ameliorating some of the associated speech-motor difficulties because of features such as continuous voicing, decreased production rate, and increased awareness of individual phonemes. (2010:7)

They go on to argue that further research is needed to test such hypotheses more robustly, and to demonstrate the efficacy and effectiveness of interventions involving singing. The emphasis placed on the development and testing of theoretical models and on testing interventions through controlled trials, points to a particular style of research and standard of evidence, which may be challenging in the context of assessing the value of group singing in care settings:

Taken together, there appears to be a number of possible mechanisms underlying the efficacy of singing in ameliorating the symptoms of various neurological conditions. Although it may be difficult to test the contribution of all of the variables to an improvement in speech motor output, it is important to test the efficacy of any new experimental intervention versus a controlled or established intervention in a randomised controlled trial. Equally important are the neural mechanisms underlying singing or auditory-motor mapping training and their therapeutic effects. Elucidating these mechanisms will enable us to tailor the interventions, to select the most appropriate patients for particular interventions, and to make predictions about recovery. (2010:7)

2.2.3 *Irons et al*

The two reviews by Irons et al. (2010, 2012) are considered here because they address singing as an intervention, but also because they illustrate the standard set by the Cochrane reviewing process in relation to health interventions. Specific questions are set for the reviews and considerable time and effort is put into identifying potentially relevant controlled trials which meet exacting methodological criteria before they can be included in the review.

In the first review, the aim was:

To evaluate the effects of a singing intervention in addition to usual therapy on the quality of life, morbidity, respiratory muscle strength and pulmonary function of children and adults with cystic fibrosis. (2010:1)

And for the second:

To evaluate the effects of a singing intervention as a therapy on the quality of life, morbidity, respiratory muscle strength and pulmonary function of children and adults with bronchiectasis. (2012:1)

In neither study were controlled trials identified and consequently no review could be performed. The reviews are thus considered 'empty', as the conclusion drawn for the bronchiectasis study illustrates:

There is currently insufficient evidence to advocate singing as a therapy in the management of people with bronchiectasis. In the absence of data, we cannot draw any conclusion to support or refute the adoption of singing as an intervention for people with bronchiectasis. (2012:7)

The methodological assumptions underpinning Cochrane Reviews set very high standards with regard to evidence claims for the effectiveness of interventions. This is highly appropriate, of course, in the context of contemporary medical science where rigorous demonstrations of clinical effectiveness are essential. Whether such standards should be

applied in the context of social activities such as singing is a moot point. Suffice to say that none of the studies included in most of the systematic reviews would survive the rigors of the Cochrane process.

2.2.4 *Grindley et al*

Grindley et al. (2011) provide a discursive review of just 12 research studies on the benefits of singing, with little detail provided on search strategy. In this respect, the approach is at the opposite end of the spectrum from the Iron et al. reviews. Nevertheless, their wide-ranging review has value and they note as do the previous reviews that studies 'vary considerably with regard to the quality of their research designs and methodological rigour'. They acknowledge that studies differ in their focus and suggest two broad categories and acknowledge that a limitation of most research is their focus on individual benefits to the neglect of considering benefits for groups or communities:

Research studies can be divided into two broad groups, those that investigate the physical/physiological effects of singing and those that are interested in the psychological/therapeutic effects of singing. Researchers in both areas are interested not only in identifying the health impacts of singing but in explaining the processes and mechanisms through which those health impacts are transmitted. However, it must be said that most of the research about singing and its effects on health and wellbeing is dedicated to the ways singing affects and benefits individuals rather than groups or communities. (2011:34)

This later point is of some significance in the present context of thinking about the value of group singing activity in care settings, where singing may well add to the general atmosphere and culture of the setting and have benefits beyond the individual level. It is also important to consider all members of the care home community including staff as well as residents.

The overall conclusions reached by Grindley et al. (2011) mirror those reached by Cliff et al. (2008) in the first review considered:

Findings on the improved social as well as personal dimensions of emotional health and wellbeing that are associated with singing in groups are strong and consistent. Numerous studies utilising different research designs and methodological approaches have reported the following benefits of singing in groups:

- increased self-confidence, empowerment, wellbeing and interpersonal skills
- a general lifting of spirits and sense of joy and accomplishment
- lowered feelings of social isolation, depression and anxiety
- increased social capital through participation in social, cultural and community activities
- denser social and friendship networks (2011:52)

In terms of recent focused on older people, the Grindley et al. review does not identify any studies not already considered in earlier reviews.

2.2.5 *Gick*

Gick's extensive literature review was undertaken from a health psychology 'biopsychosocial' perspective. Studies are considered in terms of biological, psychological and social outcomes. She concludes that the evidence is clear that singing can improve mood and has a positive social function. It may also be helpful for people with physical health issues such as breathing difficulties and help to aid pain management, and coping with stress. She notes that more work needs to be done on the effects of type of singing

(e.g. the nature of the repertoire, choral vs solo singing), the cultural background of participants, and the comparison of singing to other art forms for health. She also notes that many studies to date are small-scale and qualitative in nature and argues that further larger-scale and more robust research is need conducted within strong methodological frameworks.

Gick is particularly strong in considering the range of mechanisms at work which may account for the wellbeing and health promoting effects of singing. An integrated theoretical perspective and critical analysis of work published so far gives rise to the following table, which outlines potential mechanisms of action and variables that need to be considered in further research. If further research is undertaken on singing in care settings, the framework developed by Gick would be a useful guide to the variables and processes that should be taken into account (see Table 2).

Table 2: Singing, health and wellbeing: potential mechanisms and variables for future study (from Gick, 2011)

Category	Examples
<i>Mechanisms</i>	
Biological	Breathing control, autonomic nervous system, immune system
Psychological	Emotions, concentration, distraction, health behaviours
Social	Non-verbal communication, social interactions, social support
<i>Variables</i>	
Person	Personality, age, gender, culture, socioeconomic status, musical background, amateur vs. professional status, coping
Song	Tempo, mode, duration of notes, dynamics, genre, difficulty, familiarity, melody, lyrics, harmony vs. unison (choral)
Situation	Breathing training, performance vs. rehearsal, group or choral vs. solo

With respect to research including older people Gick identified many of the same studies included in Clift et al. (2008, 2010), plus a few more, but there are some surprising omissions – not least the studies by Myskja and Nord (2008) and Svandottir and Snaebel (2006) conducted in care settings. These two studies are of particular relevance to the current project. Their absence from the Gick review illustrates an important point that even with careful searching using a range of databases, important studies can be missed.

2.2.6 *Clark and Harding*

Clark and Harding (2012) undertook a systematic review of the literature, assessing 11 clinical trials and three qualitative studies that investigated the effects of active singing interventions on psychosocial health for people in therapeutic programmes. The review found that there was limited evidence that active singing interventions have positive effects on psychosocial health and that the quantitative studies have significant methodological limitations and lack robustness. Each of these studies was rated using the PEDro scale 'a 10-point tool with demonstrated validity for measuring the methodological quality of clinical trials' (p.83). The highest scoring papers received a score of 5 out of 10 with no fewer than 6 papers scoring as low as 2-3. Qualitative papers were generally highly rated on a set of seven criteria indicated that participants perceive significant benefits that are not actually revealed in quantitative data.

The review could not isolate singing as particularly beneficial over other activities in terms of evidence. However, the authors concluded that active singing remains valuable as it may

be more accessible for people with significant physical or cognitive disabilities when other activities may be more difficult to engage with.

In terms of research focused on older people, only one further study is identified (Takahashi and Matsushita, 2006, conducted in Japan) not discussed in earlier reviews. The study evaluated the effects of weekly singing for elder residents in care over a period of two years with positive results. However, it received a poor quality rating of 3/10, it will not be considered in Section 3.

2.2.7 *Ells*

Ells (2014), writing from a nursing perspective, reviews studies concerned with the use of music and singing to help manage anxiety in older adults. She explains the rationale for this review and its general findings as follows:

The number of older adults in the UK is increasing and they are vulnerable to long-term anxiety, depression, pain and dementia. These conditions can to some extent be relieved by medication, but this has variable adverse effects. Older people themselves often prefer alternatives such as relaxation and distraction, including listening to music or singing along. This review of relevant studies finds that the use of music as a valid nursing intervention can relieve anxiety and depression, help manage pain and improve quality of life. (2014:10)

This passage, in a few sentences, sums up both the background and the intent of *A choir in every care home*. The size of the elderly population is increasing; there are substantial age-related health issues which cannot be fully addressed through medical means, and there is a need to explore alternative options to help older people live well in the face of challenges to their wellbeing.

Of the 16 sources included within the review, only one by Cooke et al. (2010) is not identified in previous reviews. This study conducted in Australia is a randomised controlled trial on the effects of group singing (with some listening to music) on levels of agitation and anxiety in people with dementia in care. It will be considered in further detail in Section 3.

2.2.8 *Gick and Nicols, Lewis et al*

These two reviews will be considered together as they both focus specifically on research concerns with the potential value of regular singing for people with breathing difficulties (specifically asthma and chronic obstructive pulmonary disease).

Previous reviews have identified the first randomised trial on singing and COPD (Bonilha et al., 2009), and these papers identify subsequent studies which further add to the weight of evidence that singing can be beneficial for people with lung disease.

The evidence, though still limited, is indeed so persuasive that the British Lung Foundation (BLF, see references) has launched a national training initiative to promoting the establishment of 'singing for lung health' groups around the UK. The BLF sums up available research by claiming that singing for breathing can have the following benefits:

- reduce your feelings of being short of breath. By strengthening the muscles you use when you breathe, you learn to breathe more slowly and deeply
- help you to feel more in control of your breathing
- increase the strength of your voice
- improve your posture
- increase your lung capacity
- boost your body's response to infection
- reduce your use of medication when you have a flare-up

Referring to the growth of singing for breathing groups in the UK, and the role of the BLF in promoting their further development, Lewis et al. conclude by stressing the need for further research which builds upon the preliminary findings of studies to date, and meets the evidence requirements of commissioners of health and social care provision:

There has been a rapid spread of singing groups across the UK. Singing for lung health has the potential to have a positive impact on the lives of people with lung disease, improving health status and social participation. Whilst early research has been encouraging, studies that are of adequate scale and duration are urgently needed to demonstrate the effectiveness of this intervention, allowing it to be recommended in clinical guidelines and satisfying criteria for funding by commissioners of health and social care. (in press: 16-17)

Section 3 will give further details of the findings from recent research focusing in particular studies by Lord et al. (2010, 2012) at the Royal Brompton Hospital in London, and Morrison et al. (2013) in Kent.

2.2.9 *Reagon*

Finally, Reagon et al. (2016) provide the most recent review on singing interventions with a specific focus on 'health related quality of life' (HRQoL). No fewer than 12 databases were systematically searched and a detailed process of screening against inclusion/exclusion criteria and the use of quality screening served to identify only 18 studies (5 quantitative, 5 qualitative and 8 mixed methods). The cut off point for the search was February 2014, and consequently the latest date of publication is 2013. As we will see below, a substantial number of important studies have appeared over 2014-2016.

Most of the studies included in the Reagon et al. review consider the value of singing for older people, and older people with both acute and long-term health issues (COPD, Parkinson's, paralysis). Section 3 will review many of the studies identified by the Reagon et al. review, but it is striking at even in this latest review of studies carefully screened for quality, that the authors are still very mindful of the methodological short-comings of existing research on singing and health:

...the studies reviewed suggest that group singing in patients with chronic disease may contribute to improved or maintained HRQoL. However, given methodological limitations such as small sample sizes unblinded designs, lack of control, dropout rates, variable duration and frequency of singing, limited detail about qualitative methods and limited reflexivity, the conclusions drawn are tentative and there is a clear need for further research. Specifically the review suggests the need for larger, well designed RCTs as well as in-depth qualitative investigation (including longitudinal studies) to explore the mechanisms that underlie positive change through group singing as well as any negative effects. (2016:9)

2.3 **Reviews of music therapy for people with dementia**

As a second source for identification of singing interventions for older people and particularly older people in care settings, consideration was given to reviews of music therapy for people with dementia. Table 3 gives details of eight reviews identified and the sources included within them which evaluate singing interventions.

Table 3: Reviews focused on musical interventions for people with dementia

Authors	Form of the review	Scope of the review	Quality screen	No. of papers/studies	Key studies of older people and singing 2000 onwards
Wall & Duffy 2010	Structured review search of three databases	Studies of the effects of music therapy for people with dementia (with some studies of singing). Three themes: agitated behaviour, role of carers and mood and socialisation.	No quality screen described	Thirteen studies identified: 10 quantitative, 2 qualitative and 1 multi-method.	Clair 2000 Gotell et al 2003 Lesta & Petocz 2006 Sung et al. 2006 Svansdottir & Snaedal 2006
Vink et al. 2011	Cochrane review search following Cochrane protocols	Music therapy and dementia	Screening following Cochrane protocols	Ten RCTs included in the review	Methodological quality of studies quoted generally poor. Findings could not be pooled for further analysis. Brotans & Koger 2000 Svansdottir & Snaedal 2006
Raglio et al. 2012	Systematic review search using three databases	Studies of the effects of music therapy for people with dementia, with some studies of singing	No screening for methodological quality, but focus on RCTs and CCTs	Search identified 289 studies, 32 met inclusion criteria	Brotans & Koger 2000 Svandottir & Snaedal 2006 Cooke et al. 2010a,b
McDermott et al. 2013	A narrative synthesis systematic review based on search of six databases and two journals	Studies of music therapy in dementia (with some studies on singing)	Use of the CASP criteria for assessing quality	Search identified 263 studies, 18 met the full inclusion criteria	Svansdottir & Snaedal 2006 Okada et al. 2009
Ueda et al. 2013	Systematic review and meta analysis based on a search of four databases	Studies of music therapy effects on behavioural and psychological symptoms of dementia (with some studies of singing)	Methodological quality assessed using Critical Appraisal Skills Programme tools	Search identified 842 articles, 20 met inclusion criteria	Suzuki et al. 2004 Svandottir & Snaedal 2006 Susuki et al. 2007

Authors	Form of the review	Scope of the review	Quality screen	No. of papers/studies	Key studies of older people and singing 2000 onwards
Vasionyte & Madison 2013	A meta-analysis of research on music and dementia based on searches of eight databases, plus journals	Studies of effects of different types of musical interventions in relation to four classes of outcomes: affective, behavioural, cognitive and physiological	Quality screening described	Nineteen studies identified allowing for combining of data and analysis	Gotell et al. 2002 Brottons & Koger 2000 Gotell et al. 2009 Cooke et al. 2010 (health psychology paper) Harrison et al. 2010 (music and medicine paper)
Ing-Randolph et al. 2013	Systematic review of group music interventions and dementia based on search of two databases	Focus on interventions for dementia associated anxiety	No details of quality screening provided	Eight studies identified for the review	Svandottir & Snaedal 2006 Cooke et al. 2010a,b
Petrovsky et al. 2015	Systematic review based on a search of four databases plus hand searching	Music interventions for anxiety and depression in older adults with mild depression	Clear statement of inclusion criteria but no quality screening.	Ten studies included in the review	Camic et al. 2013 Cooke et al. 2010a,b

Wall and Duffy (2010) in the earliest review considered are clearly positive about the impacts of music therapy:

In various research studies, music therapy has exhibited short-term effects on the behaviour of older people with dementia, with live, individualised music being most beneficial. Levels of agitation were reduced, including verbally aggressive and non-physically aggressive behaviour. Music therapy promotes positive effects in mood and socialization of patients diagnosed with dementia. These positive effects also extend to caregivers. Undoubtedly, healthcare providers have a role to play in the provision of music therapy.' (2010:112)

Five of the studies considered relate to singing, and all have been previously identified.

The Vink et al. (2011) Cochrane review operates at much higher level of sophistication and critical scrutiny than Wall and Duffy and restricts its attention only to controlled trials. Vink et al. (2011) are fairly damning in their assessment of the quality of reporting in the ten studies identified:

Despite ten studies describing positive effects of music therapy, the studies reviewed demonstrated methodological limitations. The poor reporting of the results and poor statistical analysis impeded valid inferences.

Due to poor reporting we were uncertain of the methodological quality of the included studies. Most of the studies describe positive effects which however cannot be warranted due to methodological problems making interpretation of the results difficult. Little information was provided on randomisation methods and overall the studies consisted of small sample sizes and short intervention periods, increasing the risk of bias which may have led to an overestimation of the 'true' effect of the intervention.

(2011:12)

Only two of the ten trials were concerned with a singing intervention, and as indicated in Table 2, both had been identified through earlier reviews of singing and wellbeing.

Raglio et al. (2012) identifies the same studies as Vink et al., but adds the work of Cooke and colleagues from Australia. Their assessment of music therapy is generally favourable, but they identify many issues that need further exploration through research:

- Clearer definition of the population of patients and of the type of interventions
- Further studies aimed at identifying which types of dementia have the greatest chances of improvement due to different kinds of music and music therapy interventions
- Assessment of a possible dose–effect relationship of the different interventions
- Evaluation of the cognitive and physiological aspects, by identifying adequate assessment tools
- More comparative studies on the effects of music therapy versus music engagement

McDermott et al. (2012) are also generally critical of the quality of studies on music therapy and dementia, but they raise an important point that quantitative approaches to evaluation need to be supplemented with qualitative methods of assessment in order to appreciate benefits which standardised instruments cannot capture:

This review is in agreement with previous systematic reviews (e.g. Vink et al., 2003, 2011) that found evidence for short-term improvements in behavioural and psychological disturbance. There were no high-quality longitudinal studies that demonstrated how and why music therapy might have worked. The limited availability of high-quality studies and the lack of evidence for long-term benefits of

music therapy also highlight the difficulty of finding appropriate outcome measures to evaluate a complex intervention for people with dementia and the need for more research in this area. The choice of measurement instruments is crucial in assessing the long-term effects of an intervention. However, there may be a danger of choosing well-established measures in an attempt to provide trustworthy evidence, yet that may not be most relevant to the experiences of people with dementia. (2012:792)

This review, like many before, identifies the work of Svansdottir and Snaedal 2006 in Iceland but also picks up the study by Okada et al. 2009 in Japan. The latter study will be considered further in the next section.

The review by Ueda et al. (2013) is particularly welcome as it attempts to synthesise the findings from multiple studies and arrive at estimates of the size of the effects that music therapy may have on behavioural and psychological symptoms of dementia (BPSD). It is important to consider whether musical interventions achieve benefits, but also important to consider how large these benefits are – in other words, how much change do they achieve; how are outcomes related to the extent of the input; to what extent are the changes sustained, and how do musical interventions compare with alternative activities? This is the strength of meta-analysis which draws findings from several studies together. Based on the data reported in 20 studies that survive screening, the authors conclude that quantified answers can be given to these kinds of questions but that effects are small to moderate in scale:

This systematic review and meta-analysis (...) showed that music therapy influenced BPSD in patients with dementia. The length of the intervention period was associated with the effects of the music therapy. In particular, interventions of >3 months durations strongly decreased anxiety. Furthermore, the effects of music therapy were greater than those of other non-pharmacological interventions. Even though the effects of music therapy were small (...), music therapy is recommended for the management of BPSD, especially after considering the adverse effects of pharmacological intervention on one's health. (2013:639)

Another meta-analysis is reported by Vasionyte and Madison (2013) and further studies on singing are identified through it. They offer further interesting reflections on the value of music in dementia care but caution yet again that studies have methodological limitations, and suggest that in some circumstances, listening to music may be more beneficial than approaches involving active engagement:

Music interventions seem to be effective and have the potential of substantially increasing the quality of life for patients with dementia. Unfortunately, many studies in this area suffer from poor methodological quality, which limits the reach of meta-analysis and the strength and generalisability of these conclusions. (...)

The available data are insufficient to conclude which types of music interventions are most effective. It is clear that patients as well as their diseases exhibit a wide range of individual difference and that the most effective treatment for a given patient can only be determined by trial and error. The pattern of results (...) suggests, however that the likelihood for a positive outcome is higher when simply listening to music rather than engaging in active music therapy, using recorded rather than live music of a classical/relaxation rather than a pop/native type. (2013:1210)

They go on to make an interesting point in the context of the current project, that as more musical interventions are established, more opportunities may arise for larger more robust studies. Thus any coordinated initiative to encourage more singing in care settings should be planned with a substantial evaluation in mind.

A considerable increase in applying music interventions, which are inexpensive and have no known side effects, would provide an excellent opportunity for larger and better studies. This is likely to establish which forms of music interventions are most efficient and to help develop their effectiveness further for specific patient groups. (2013:1210)

Ing-Randolph et al. (2015) provide a more recent review, with two projects on singing included which have been identified through earlier reviews. Again, they add to the litany of methodological critiques offered in earlier reviews, but they emphasise the positive potential of music therapy interventions in the care of older people with dementia:

Notwithstanding some of the methodological limitations in the studies that have been discussed and the need for further more rigorous evaluation of [music therapy], we believe that the evidence we have reviewed is promising and suggests that [music therapy] is a safe pharmacological intervention that may reduce agitated and distressed behaviour in older people with dementia and improve the quality of therapeutic interactions between them and their caregivers. Furthermore [music therapy] is inexpensive and uncomplicated to deliver and has strong potential for wide-scale implementation in routine practical settings. Mental health nurses and other care workers who work in residential settings should consider the potential utility of [music therapy] for their client group. (2015:887)

Finally, Petrovsky et al. (2015) review music interventions and their effects on symptoms of anxiety and depression in older people with mild dementia. Following a careful search and screening of research studies, they identify just ten that meet their criteria. Their conclusion reiterates the commentaries from earlier reviews in noting the variable quality of studies and the lack of consistent evidence:

Overall, the research demonstrates mixed effects of a music intervention on anxiety and depression in persons with mild dementia due to low methodological (...) The effect of music interventions in lessening anxiety symptoms in older adults was not consistent across studies. (2015:1664)

Similarly, the studies investigating the effect of a music intervention to improve depressive symptoms in older adults with mild dementia lacked methodological rigor and reported mixed efficacy results. (2015:1666)

2.4 **Reviews of arts interventions for wellbeing and health**

In addition to reviews focused on singing and health, and those concerned with music therapy and dementia, a limited number of more general reviews were considered: on the value of arts interventions in clinical and care settings and for older people and people with dementia. Details are given in Table 4. These reviews are of interest as they cover the full range of creative arts activities for health and thus provide a context within which to place singing as an arts for health intervention. It is important to recognise that the arts and health field covers the whole range of artistic, creative and cultural activities, all of which may have benefits. Issues of personal preference and interest are also a prime consideration, as engagement in an arts activity is unlikely to have benefits if an individual does not enjoy it.

Table 4: Additional reviews considered for the identification of research on singing and older people

Authors	Form of the review	Scope of the review	Quality screen	No. of papers/studies	Key studies of older people and singing 2000 onwards
McClean et al. 2011	Review of research on creative arts participation and older people based on searches of	Studies of creative arts participation	No details given but selection of papers based on 'expert' consultation	Over 500 sources identified and 31 studies reviewed	Bungay & Skingley, 2008 Cohen et al. 2007 Hillman 2002 Lally 2009 Murray et al. No date Southcott et al. 2009
Chanda & Levitin 2013	Discursive review with no details of search strategy	Studies related to the neurochemistry of music, with four studies of singing included	No inclusion and exclusion criteria given and no screening process described	Four studies on singing included. None specifically focused on older people with long-term conditions	No relevant studies
Bungay et al. 2014	A critical review based on a search of five databases	Impact of arts in healthcare on patients and service users	Inclusion and exclusion criteria specified and recognised quality screening tools applied	A very wide ranging literature considered but only one research paper concerned with singing identified – children with cystic fibrosis	No relevant studies
Zeilig et al. 2014	A critical review based on a search of no fewer than 14 databases	Effects of participative arts programmes on people with dementia	Six inclusion criteria given but no quality screen applied	A total of 63 articles located	Bannon & Montgomery Smith, 2008 Clift et al. 2009 Gotell et al. 2009 Cohen et al. 2006, 2007 Cooke et al. 2010 Harrison et al. 2010 Camic et al. 2013 Sarkamo et al 2014
Young et al. 2015	Systematic review based on search of 5 databases	Arts interventions in relation to cognitive function in people with dementia	No details of a screening but papers evaluated using a standard framework	Seventeen studies reviewed relating to the literary, performing and visual arts	Lepp et al. 2003 Davidson & Fedele 2011 Camic et al. 2011 Sarkamo et al. 2014

It is clear from Table 4, that some of these reviews are of limited value in relation to the focus of the current review as studies in singing for older people either do not feature, or have already been identified through direct reviews of singing and of musical interventions for dementia. In the case of McClean et al. (2011) (a review conducted for the Baring Foundation by the Mental Health Foundation), a paper by Southcott et al. (2009) is identified which is striking since none of the singing focused reviews found this paper. In fact, Southcott and her colleague Joseph, have conducted a whole series of studies on community choirs in Australia as we will see in Section 3.

The Zeilig et al. (2014) and Young et al. (2014) reviews also pick up more recent important work, particularly the randomised controlled trials conducted by Camic et al. (2013) in the UK, Sarkamo et al. (2014) in Finland and Cooke et al. (2010) and Harrison et al. (2010) in Australia. All of these studies are covered in Section 3.

A concluding paragraph from Zeilig et al. (2014) provides an especially sensitive and humane end to this section considering the findings from a large number of critical and systematic reviews. The focus is on the value of the participative arts for people with dementia (PWD):

Despite the need for further stringent evaluative research, the work that has already been conducted indicated that the participative arts will continue to develop and respond to the needs of PWD in uniquely valuable ways. In particular, recent work in the UK (Zeilig et al. 2014), indicates that feelings of peace may be generated for PWD by music making, and that arts projects can produce internal connections and also friendships. In addition, arts projects can create a space that is outside the demands of daily life and the ability for PWD to engage reciprocally. Whilst it is difficult to establish whether these effects are intrinsically associated with the arts activity as opposed to any other form of social participation; the inherent emphasis of most arts projects is on group creation and playfulness. The focus on play and creation privileges the present moment and is particularly valuable for PWD. (2014:26)

See references for further details, and a short film, of the work of Zeilig et al.

3 Singing, wellbeing and health: selected papers

3.1 Introduction

As noted in Section 1 above, in conducting this review careful efforts have been made to identify all available research on singing for wellbeing and health conducted to date. This has been accomplished by consulting previous systematic reviews of research on singing for wellbeing; reviews of music therapy for dementia and more general reviews concerned with the wellbeing benefits of active participation in arts and creative activities. In addition, searches were undertaken through existing databases (e.g. PubMed) and use was made of Google Scholar. As the Sidney De Haan Research Centre has had an active interest in singing and health for the last ten years and has an extensive collection of research papers and has made direct contact with most of the researchers active in the field over that period, we were also able to contact researchers directly to ensure that we were aware of any recently published research of relevance to this review.

Now in considering the research evidence on the value of singing for health, we intend to be selective and focus only on studies that include older people, generally from the age of 60. People aged from 50-70 may be considered to be 'young old' and people aged beyond 70 may be described as 'old old'. More important than age, however, is whether an individual remains active and healthy as they age, or whether they are affected by one or more long-term health conditions which affect their sense of wellbeing, mobility and capacity for independent living. Given the concern of the current project to consider the value of singing in the context of care, we were particularly concerned to ensure full coverage of relevant studies conducted with elderly residents in social care and healthcare settings.

In addition to these inclusion criteria, a number of related and additional exclusion criteria were set to screen out studies which were not of central relevance to the concerns here, even though they might contain important findings germane to the general case in support of singing for health. These were:

- Studies where a substantial proportion of the sample was below 60. For example, Groener et al. (2015) report a study on the value of group singing as a therapy in the context of a three-day educational programme for people newly diagnosed with diabetes. The study was a small controlled trial 'to investigate the effects of singing as a therapy on physiological stress parameters and psychosocial stress in insulin-dependent diabetic patients undergoing a diabetes intervention program.' (pp.617-18). The average ages of the intervention and control groups, however, were 46 years and 40 years respectively. Similarly, the otherwise important study by Kreutz (2014) on singing and social bonding, investigated a singing group with a median age of 50.
- Studies where the singing intervention investigated was brief in character. This criterion also applies to the Groener et al study, as participants in the intervention group experienced on three 30 minute sessions over three consecutive days. Perhaps not surprisingly, no differences were found between the two groups on any of the physiological measures taken before and after the intervention and on three months follow up. It applies to the study by Kreutz (2014) in which participants were recruited to engage with 10 minutes of warm-up activity followed by 20 minutes of singing. In contrast to the Groener study, however, meaningful physiological changes were found, with singing (compared with social conversation) eliciting a significant increase in the hormone oxytocin which is linked with feelings of social connection and wellbeing.
- Studies where the singing intervention investigated was individual singing. Gräsch et al. (2013), for example, assessed whether 10 minutes of self-directed individual singing activity a day over 12 weeks would improve pulmonary function and quality of life in patients with COPD. The outcome was no change seen for either lung function

measures or quality of life. A study by Sakano et al. (2014), with older people aged 60 and over, is also excluded due to the short period of singing investigated, but additionally because participants sang individually. Here is the description of their procedure:

Subjects were required to arrive 40 minutes before the test and were seated quietly in the testing room 30 minutes prior to the test, during which time they were asked to complete the pre-test VAS and POMS questionnaires. Subjects were measured for height, weight, blood pressure, and heart rate. Unstimulated saliva collection, a Saxon test, stimulated saliva collection and blood collection were performed in that order. The subjects then sang three songs consecutively. They selected songs that they could sing in entirety. The mean singing duration was 3 minutes 50 seconds, and there was no notable deviation in singing time (3SD). After singing, saliva and blood samples were collected in the same manner as that used for the pre-test, and the subjects once again completed the POMS and VAS questionnaires. (2014:2)

- Studies with very small samples (except in the case of singing for dementia) Pacheco et al. (2014), for example, report a pilot study on the value of ten weekly sessions of singing for patients with chronic obstructive pulmonary disease. Eight participants were recruited but two were lost and a further two attended less than 7 sessions. Consequently, results for four patients on lung function and psychological measures are presented as individual case studies.
- Studies where singing was one component of a music therapy intervention which included other musical activities, and consequently, the effects of singing per se could not be determined.
- Studies where the music therapy intervention involved the use of songs, but was not sufficiently described to be clear about the exact form of the activity. This applies, in particular, to a Japanese study by Okada et al. (2009). This is unfortunate, as the study is remarkable for several reasons. Firstly, it involved elderly participants with advanced dementia and cerebrovascular disease; secondly, the intervention was compared with a comparable (though non-randomised) control group; thirdly the music therapy ran weekly for at least ten sessions; fourthly, they employed a range of physical and physiological measures to assess relaxation effects of the music, and finally, a range of strikingly positive effects are reported, which the authors interpret as indicating enhanced parasympathetic nervous system activation due to singing. From the description provided of the music intervention, however, it is not clear whether the therapy was undertaken individually or in a group, or whether patients were encouraged to sing or were sung to:

MT was performed once per week for 45 minutes from 11.00 to 11.45 am by two experienced and licensed music therapists according to the guidelines of the Japanese MT Society. The MT consisted of well-known Japanese nursery rhymes, folk songs, hymns, and recent Japanese popular music. (2009:97)

In what follows, selected substantial studies of group singing and older people are presented under five headings:

- Studies on older people who are voluntarily participating in singing activities: choral societies, choirs and community singing groups
- Studies of general samples of independent older people (i.e. not affected by defined health problems) participating in community singing groups established for research purposes
- Studies on the benefits of singing for independent or dependent older people living with or affected by illness: e.g. respiratory illness, Parkinson's etc.

- Studies on the value of singing for older people with dementia living at home and cared for in health and social care settings
- Studies focused on the value of singing by care-givers in the context of providing care (e.g. during routine care procedures such as bathing) for dependent older adults with dementia

3.2 Older people participating in choirs and community singing groups

3.2.1 *Clift and colleagues*

The largest study of singers in established choral societies and choirs is reported by Clift and his colleagues, from a survey which included over 1,000 participants in Australia, England and Germany (Clift et al., 2009; Clift and Hancox, 2010; Livesey et al., 2012). Participants completed a structured questionnaire on their perceptions of the benefits gained from singing (derived from Clift and Hancox, 2001) and answered three open questions asking them to identify any effects on quality of life, psychological and social wellbeing and physical health. In addition, the World Health Organisation short-form health-related quality of life questionnaire – WHOQoL-BREF was employed to gather data on the health profile of the sample across four dimensions: physical, mental, social and environmental wellbeing.

The average age of the choristers was relatively high (mean = 57, sd = 15) with a third aged 60-69 and a fifth aged 70 plus. Women out-numbered men by approximately 3:1. With respect to health, a large majority were satisfied with their health and described it as at least 'good'.

Factor analysis of the singing items identified a strong initial 'wellbeing' component with substantial loadings from 12 items. Remarkably, the structure of this component was highly stable across the three nationalities and for men and women, considered separately. The top five items give a clear sense of the positive perceptions of the effects of singing on feelings of happiness and wellbeing. Singing, they reported:

- Makes me feel a lot happier afterwards
- Gives a positive attitude to life
- Has improved wellbeing/health
- Releases negative feelings
- Helps make me a happier person

For the WHO psychological scale, a majority of respondents scored highly indicating at least 'good' self-assessed psychological wellbeing. A small proportion of choristers, however, gave low scores, which could indicate mental health difficulties. For example, just over 6% of participants gave ratings which indicated that they 'very often' or 'always' experienced 'negative feelings such as blue mood, despair, anxiety, depression'. (p.87)

To explore the links between experiences of singing and problems with wellbeing and health, the written accounts given by participants scoring low in mental wellbeing but highly on the perceived benefits of singing, were examined. Approximately 20% of this group gave information on challenges they were experiencing under the following headings:

- Enduring mental health problems
- Significant family/relationship problems
- Significant physical health issues/disability
- Recent bereavement

In addition, they identified ways in which being part of a choir and singing regularly had helped them cope with these challenges:

As a carer of two relatives stricken with schizophrenia, I have suffered from reactive depression (...) Having a pleasant start to the day knowing I shall meet like-minded people and enjoy music making, hopefully having a laugh along the way. Hearing the harmonies helps me forget family worries. (English female, 70)

It plays a significant part in my emotional health and wellbeing. I find music uplifting. When recovering from a major stroke, singing was one of the ways of lifting my spirits out of depression. (English male, 65)

The accounts given also suggest ways in which singing works to promote a sense of wellbeing, and Cliff and Hancox identify six generative mechanisms which operate jointly and have a range of positive effects:

The mechanisms are as follows: positive affect, focused attention, controlled deep breathing, social support, cognitive stimulation, and regular commitment. Each of these mechanisms serves to counter forces and processes that are potentially detrimental to health. The general principle at work here appears to be one of re-balancing or counter-action. (2010:90)

Here are examples relating to 'positive affect'. In the following comments, the capacity of singing to generate positive feelings is linked to a process of counteracting feelings of sadness, anxiety and depression in other areas of their lives:

When you sing you cannot be sad for long. It really lifts your spirits. Being in a choir means you are in a team – you all help each other with gives tremendous satisfaction. (English female, 52)

Singing improves my mood and my health. I have to be on guard constantly against my medical condition (anxiety and depression). (Australian female, 49) (2010:90)

The benefits of 'controlled breathing': Controlled breathing is of course, intrinsic to the activity of singing, and was widely identified as a physical benefit associated with being a member of a choir. In addition, the following respondents were more explicit in suggesting that deep controlled breathing can counteract anxiety and stress, and also give a sense of fitness:

Deep breathing, essential for singing, is one method of helping with signs of anxiety and stress (English female, 70)

I think that you are kept fit by choral singing because you breathe correctly and you engage your whole body in the activity, like you do when practising yoga or when doing sports (walking for fitness) (German female, 50) (2010:90)

And the effects associated with 'cognitive stimulation':

Choral singing involves education and learning, which keeps the mind active, and gives a sense of achievement. The following respondents highlight ways in which choral singing can offer a challenging and worthwhile activity and possibly serve to counteract age-related decline of cognitive function:

[choral singing is] A very satisfying activity to be involved in at any age but I think especially valuable to people in their later years when they have time on their hands. I think choral singing is a particularly valuable and worthwhile activity to fill some of this time and give a real sense of achievement at a time when one might be feeling one's usefulness is declining (Australian female, 60)

Apart from the relaxation benefits, I believe that for me, aged 57, keeping the brain active and having to concentrate for long periods will delay if not complete prevent senile dementia! (English female, 57) (2010:91)

In a similar survey study, Johnson et al. (2013) report that singers in community choirs in Finland (including choirs specifically for older people) benefited from a higher quality of life, fewer symptoms of depression, and improved satisfaction with health.

3.2.2 *Southcott and colleagues*

Southcott and her colleagues (Southcott, 2009; Joseph and Southcott, 2014a,b; Li and Southcott, 2011) have undertaken a series of five phenomenological qualitative case studies, as part of a large scale project started in 2008 to consider the benefits of community singing in active ageing. Information was gathered from background website searches, interviews using open-ended questions, and transcripts. Questions largely focused on the perceived benefits of choir membership. Five community choirs were involved, each of which had between 10-50 people. The membership was predominantly female with an age range from 50-90. All were Australians, but some were of particular ethnic origin, settled in the country from eg Italy, Bosnia, China. Most had weekly rehearsals, gave concerts, performed unison and harmony music with large repertoires. Members of each of the choirs were interviewed about their experiences and the benefits they felt they had gained, with data analysed using the techniques of Interpretative Phenomenological Analysis (IPA).

The themes emerging varied to some extent from study to study, but the following common benefits were identified:

- wellbeing (lifts mood, rejuvenating, improved breathing, leave troubles behind, cathartic, feeling better)
- bringing joy to others, giving back to the community, being a part of something, make a difference.
- staying active, keep learning, aids memory, shared learning, and doing new things.
- friendship, moral stand peer support, socialising, connecting with like-minded people, feeling like a family (especially important for those without one, or refugees/language barriers).
- happiness and enjoyment
- sense of purpose, belonging, self expression and self worth
- breaking cultural stereotypes of ageing
- provided a positive and safe environment, giving self-confidence
- avoiding loneliness and isolation, getting up and out the house - boredom creates sickness
- connections with the past, reminiscence, nostalgia, shared heritage and culture keep it alive.

These themes are very much in line with earlier qualitative research, and for people who choose to participate in choirs and community singing there is clearly a consensus that on a personal and social level, regular singing is experienced as beneficial.

3.2.3 *Silver Song Clubs*

In addition to already established choral societies, choirs and community singing groups, open to all, there is also a literature evaluating 'singing for wellbeing' groups that have been independently set up for older people on the assumption that singing is beneficial. There is an overlap here with groups established specifically for people with dementia, but the following examples are of groups open to older people who do not have a dementia diagnosis.

Silver Song Clubs (see references) were established in 2005 by Stuart Brown of Sing for Your Life, and Golden Oldies were established in 2008 by Grenville Jones. Both of these projects have been the subject of independent evaluation.

The charity Sing for Life has developed and run community singing groups, known as Silver Song Clubs, for older people since its inception in 2005. Recently, they have innovated with introduction of technology – the Silver Song Music Box - to assist with the delivery of singing programmes. The music box allows for flexibility in the delivery of music and lyrics to support singing through modulation of key and tempo to suit the singing group. Box 2 below gives details from the Sing for Your Life website.

Box 2: Sing for Your Life: The Silver Song Music Box

Singing is an activity that accesses the long-term memory. This kind of music therapy can be especially helpful for those who are coming to terms with living with dementia, or have had a stroke or have been diagnosed with Parkinson's. The Music Box, whose programmes are designed by the charity Sing For Your Life, has proved successful in a variety of placements – residential care and nursing homes, hospitals and community centres. An occupational therapy student from the University of Brighton has described it as *“A really useful tool for the group and has worked really well enabling everyone to engage in the singing and reminiscence. I found it very simple and logical to set up and use and it was very adaptable.”*

The Music Box does not require any formal musical training to operate. It is therefore a considerable asset that can be used by any staff member, nursing or otherwise and at any time. It enables clients to gain from the many benefits that this group activity allows on a regular (daily) singing basis - a lot more often than is usually possible. It plugs into a television, or it can be operated through a projector and speakers. The bespoke piano accompaniment is designed to replicate singing round the piano in a pub or in the home. Unlike a Karaoke machine, which has a lot going on via the visual and musical backgrounds which can be confusing to many Dementia or elderly patients, the Music Box has been adapted to provide a simple colour background with only the words being displayed. Crucially, the key and speed can be changed to suit each individual patient group. It is also possible to show images on the screen which has been found to be very useful in the field of reminiscence.

Source: Sing for Your Life website

At an early stage in its work the Silver Song Clubs were evaluated by researchers from the Sidney De Haan Research Centre. The initial evaluation (Skingley and Bungay, 2010) sought to identify the key characteristics and processes of a Silver Song Club and to gain the views of participants, facilitators, volunteers and centre managers regarding the health and social benefits of attending the clubs. Semi-structured interviews were conducted with 17 participants from three of the clubs. Participants valued the opportunity to sing with others, and they liked the organisation of the clubs, including the ways in which different facilitators presented the materials and choice of songs. Approximately three-quarters of those interviewed had quite extensive previous experience either as members of choirs or singing groups or playing musical instruments. The following themes were identified as potential benefits for the participants of attending Silver Song Clubs: enjoyment, promotion of wellbeing and mental health, social interaction physical improvement, and cognitive stimulation.

On the basis of the initial evaluation a further survey was conducted involving all Silver Song Clubs operating in the South East of England at the time (Bungay, et al., 2010). A total of 369 members of 26 clubs completed the questionnaire. Ages ranged from 60-99, with an average age of 79. Most were female (77%) living in their own homes (88%) as opposed to residential or nursing care. More than half lived on their own (52%) and a third received some external support (33%). In general, large majorities of the participants enjoyed the clubs, looking forward to them and felt that singing helped to make them feel better in themselves. Interestingly, however, previous experience of music and singing was

an important factor in this respect. Most people with lower previous musical experience enjoyed the clubs (86%) and looked forward to them (82%), but to a lesser degree than those with previous higher experiences (98% and 96%). The main issue here is that a minority of the participants appear not to have enjoyed the singing activity.

3.2.4 *Golden Oldies*

Teater and Baldwin (2012) evaluated the Golden Oldies community singing programme (see references) in the context of considering the idea of successful ageing. They provide the following description of the programme:

The Golden Oldies is a community-arts programme that provides an environment and resources for older adults to get together and sing songs for one hour a week. The sessions are led by paid session leaders who use an official Golden Oldies songbook. Golden Oldies started in the Bath and North-East Somerset (BANES) area in January of 2008, with sessions now taking place across the west of England and into Wales. The charity works closely with local and unitary authorities and housing associations and is based on the premise that singing is good for you in terms of physical, social and emotional well-being. Golden Oldies has the following three aims: (1) to reduce social isolation and increase social contact; (2) to provide an environment for participants to make new friends; and (3) to encourage participants to have activities and things to look forward to. (2012:5)

Participants in this programme (n=120) completed a questionnaire to assess their sense of health, self-development and social connectedness. Between 73.1 and 98.3 per cent of participants agreed or strongly agreed that the Golden Oldies contributed to their self-development, health and sense of community as well as revealing a statistically significant increase in self-reported health prior to participation in the programme to the time of the study. Interviews were also conducted with five members of the singing groups and analysis revealed three themes. Golden Oldies helped to reduce social isolation and increase social contact; helped participants deal with challenges in their lives, and also offering a meaning enjoyable pursuit giving rise to 'a new lease of life'.

3.3 **Older people in community singing groups set up for research purposes**

Cohen et al. (2006, 2007) evaluated the health and wellbeing benefits of different forms of creative engagement for older people aged 65 and above in the USA. The research programme included establishing a professionally-led choral group which was followed for two years. Changes on a wide range of objective and standardised measure of health and service utilisation were compared with a comparable but non-randomised control group that did not engage in singing. Participants' health and social activities were measured before the start of the intervention and then one year and two years later. Health measures included a self assessed over all health rating, information on health service utilisation medication, number of falls and standardised questionnaires assessing morale, depression and loneliness. In addition, participants were asked to give detailed information on the 'nature, frequency and duration of their social activities.

The outcomes of the study were remarkable. The researchers sum up their findings from the first year assessment as follows:

Results obtained from utilizing established assessment questionnaires and self-report measures, controlling for any baseline differences, revealed positive findings for the intervention showed that the intervention group (chorale) reported a higher overall rating of physical health, fewer doctors visits, less medication use, fewer instances of falls, and fewer other health problems than the comparison group. The intervention group also evidenced better morale and less loneliness than the

comparison group. In terms of activity level, the comparison group experienced a significant decline in total number of activities, whereas the intervention group reported a trend towards increased activity (2006:726)

Findings continued to be positive after two years, and are summed up as follows:

Results revealed positive intervention effects in relation to physical health, number of doctor visits, medication usage, depression, morale, and activity level. (2007:5)

Cohen et al. (2007) highlight the important implications of the improvements seen, given the high average age of the participants:

Moreover, the actual improvement reported in general health and the sustained level of involvement in overall activities 2 years into the study, reflects the reduction in risk factors driving the need for long-term care, through continuing involvement in a high-quality participatory art program – in this case, in an ongoing choral directed by a professional conductor. (2007:20)

The Cohen study is analysed in considerable detail by Clift et al. (2008) and concerns are expressed about technical features of testing and analytical procedures. Details need not be rehearsed here, but they do suggest that caution is needed in reading and interpreting the details of their results. Nevertheless, the thrust of their findings overall point to the health-promoting value of community singing for older people.

In addition, the study was influential in encouraging further developments in the provision of group singing opportunities for older people in the USA. One example is the Senior Singers Programme developed in 2009 by the Bel Canto Chorus in Wisconsin: (see references).

An ongoing study in the USA is exploring further the potential role of singing for promoting the health of older people, building on the Cohen work (Johnson et al., 2015). Findings from this cluster randomised trial are yet to appear: see references for contacts.

Coulton et al (2015) report a recent British study on the effectiveness and cost effectiveness of community singing for mental health-related quality of life among older people aged 60 and above. The study is the first fully randomised community control trial comparing weekly group singing with usual activities over three months. Follow up also took place three months after the end of the singing intervention. The team observed that there were significant benefits in quality of life for the singers including reduced levels of anxiety and depression at three months, and improved mental health related quality of life at six months follow up. Skingley, Martin, and Clift (2015) in a careful qualitative analysis of written accounts from participants of their experiences of singing in the project, noted that over time community singing led to specific, incremental benefits on physical, psychological, social, and community well-being.

3.4 The value of singing for older people living with health challenges

With respect to the value of singing for health and wellbeing, a growing body of literature has explored the idea that singing can be helpful in various ways for older people with long-term and progressive illness. Two areas of particular interest have been the benefits of singing for people with respiratory illness and the contributions singing could make to people with vocal difficulties due to neurological factors. As we have seen in Section 2, reviews of previous research have focused on these questions and reviews by Gick and Nicols (2015) are concerned specifically with singing for breathing and by Wan et al. (2010) on singing and neurological conditions.

It is easy to see why it might be thought that singing could benefit lung function, given that the lungs and the breath serve to power the spoken and singing voice. Singing typically

involves a rapid deep in-breath followed by an extended controlled out-breath, and so regular singing should help to encourage participants to breath more deeply and in more controlled and regular way, and so help to develop skills of better breathing beyond singing. Similarly, singing involves using the voice, and indeed the gap between speaking and singing is very narrow, but with singing there tends to be a slower rate of production with words broken down into constituent syllables and an enhanced consciousness of achieving more distinct articulation.

In what follows, research on the value of singing for people with health challenges is considered in relation to chronic respiratory illness, Parkinson's and cancer.

3.4.1 *Respiratory illness*

To date, three small-scale RCTs have been published on the value of group singing for people with COPD – one in Brazil (Bonilha et al., 2009) and two in the UK (Royal Brompton and Harefield Hospital) (Lord et al., 2010, 2012). In these studies the interventions took place in a clinical setting with a focus on singing instruction in small groups of patients with recommendations to practice at home between sessions. The studies were small, varied in the length and frequency of the singing intervention and the nature of the control condition.

Bonilha et al. (2009) found significant improvements in expiratory pressure following singing for COPD patients relative to a decrease in the control group. Improvements may reflect the muscle strengthening effects of singing. They also report an increase in quality of life scores but improvements were also found in the control group with no significant difference between the groups.

Lord et al. (2010, 2012) in both studies of singing for patients with COPD found significant improvements on the SF36 questionnaire physical health component scores for the singing groups relative to controls. Lord et al. (2010) also reported significant improvements in anxiety scores for the singing group using the Hospital Anxiety and Depression Scale (HADS) compared to the usual treatment control. No significant improvements for the singing group on any other measure in the battery employed, including functional exercise measures. Surprisingly, in the 2010 study improvements in one breath control measure was found for the control group over the singing group. Qualitative feedback from patients in both studies indicate clear psychological and social benefits from singing.

A recent controlled trial has examined the role of music therapy as an adjunct to pulmonary rehabilitation for patients with COPD (Canga et al. 2015). The intervention was very short (six hours) and included singing as part of a wider range of activities including improvising on wind instruments. Additional controlled studies have assessed the impact of singing on respiratory function for people with asthma (Gick and Daugherty, 2015) and quadriplegia (Templin et al., 2013) with some positive results on general wellbeing but limited impacts on lung function.

In addition to these RCTs, a feasibility study in Canada (Goodridge et al., 2013) examined the value of group singing as an adjunct to on-going pulmonary rehabilitation (PR) with comparisons made to a PR only group. The study was small in scale, and short-term. No significant changes were found on any measure employed, but a deterioration was found in the mean quality of life scores for the singing group.

Morrison et al., (2013) adopted a very different approach to that followed in the small RCTs described earlier. In this project a network of singing groups were established for COPD patients in community venues. The purpose of the study was to answer a number of important feasibility questions regarding recruitment, acceptability of the activity, sustained involvement and effect sizes as a basis for designing a community-based RCT. COPD patients were recruited via the community rehabilitation team, local British Lung Foundation

Breathes Groups, Primary Care and advertising in local media. A total of 106 patients engaged at the outset and joined one of six community singing groups which met weekly for 10 months and joined together for two combined performance events. This represented a maximum of 40 hours of group singing, which exceeds the input from any of the previous RCT studies.

Baseline assessments involved a battery of respiratory measures and standard questionnaires including the St. George's Respiratory Questionnaire (SGRQ). These measures were repeated immediately post-intervention. The questionnaires were also completed halfway through the project. At follow up a total of 71 participants remained in the study (33% attrition), a much larger sample of COPD patients singing than in the three RCTs combined (n=43). Results from the study were encouraging:

- Significant changes in standard spirometry measures following singing (FEV1%, FVC, FVC%). While uncontrolled, this finding is encouraging as everything being equal a deterioration in these measures would be expected over time
- Significant improvements on SGRQ impact and total scores indicating improved self-assessed health status. The SGRQ total score improvement at 3.3 was below the MCID of 4 points (Jones, 2005), but as with spirometry measures the SGRQ scores are generally expected to deteriorate with time.

Careful qualitative analysis of written feedback from participants in this study (Skingley et al., 2014) also clearly documented psychological and social benefits from participation in group singing.

On balance the available evidence suggests that regular group singing can have self-assessed health and wellbeing benefits for patients with COPD. Qualitative evidence also points to psychological and social benefits. Given that residents in care settings may have difficulties with their breathing, these studies point to one of the benefits that regular singing in such settings may hold.

3.4.2 *Parkinson's disease*

As with the promotion of singing for lung health through the British Lung Foundation, Parkinson's UK as a national charity has also helped to promote the value of singing for people affected by this condition. Their website provides guidance on setting up singing groups and gives details of groups running throughout the country (see references) and one of the earliest singing groups for Parkinson's, Sing for Joy, was established in 2003 and is still going strong.

Referring back to the reviews published to date on singing for wellbeing and health, one study on singing and Parkinson's by Di Benedetto et al. (2009) is repeatedly identified. They report a small-scale, uncontrolled study of choral singing for Parkinson's patients in Italy. The rationale was that group singing could be a cost-effective form of intervention to help improve speech quality. Twenty patients were recruited into the study, and over a period five months participated in vocal exercises and choral singing. Significant improvements were found in maximum phonation time, measured by asking patients to sustain the vowel 'a' for as long as possible and improved quality of prosody and reduced fatigue when reading a short passage. In addition, improvements were found in respiratory variables measured by standard spirometry, including increases in maximal inspiratory and expiratory pressures (confirming findings from studies with patients with COPD that singing can help with lung function). While the study was small and uncontrolled, these findings indicate that singing may be useful for people with Parkinson's in maintaining speech quality. In addition, it is clear that the activity was highly valued in contributing to overall

wellbeing and quality of life. This is convincingly demonstrated by the fact that the choral group formed for research purposes continued to meet after the study and gained new members. The 'Corale Gioconda' went on to give many public performances.

In a further study in the UK, Evans, et al. (2012) investigated whether group singing lessons, provided by a professional singing teacher, can provide an effective means of improving and maintaining voice dynamics for people with Parkinson's disease and possibly also improve quality of life. The study was undertaken by recruiting people with a diagnosis of Parkinson's with voice problems and inviting them to attend a two-hour singing session every fortnight for two years. An assessment of voice dynamics using the Frenchay Dysarthria test was carried out by the local UK National Health Service (NHS) Speech and Language Therapist at the beginning of the study, then every six months for two years. It was expected that singing would provide benefit to all four main parameters of speech: respiration, phonation, movement of facial musculature and articulation. It was also possible that the group sessions would provide support and an element of fun and thereby improve quality of life. This was measured using the validated PDQ39 measure of quality of life for people with Parkinson's. Assessments over the two years of the study showed small but statistically significant improvements in the laryngeal elements of the Frenchay Dysarthria Score. Participants also reported a feeling of improved communication which was reflected to a small degree in the quality of life questionnaire. While small in scale and uncontrolled, this study has the strength of following Parkinson's patients over two years and finding some evidence of improvements, when everything being equal a deterioration in voice quality might be expected.

Beutow et al. (2014) provide a valuable theoretical discussion of two factors,-- "connectedness" and "flow" – that might underpin the value of group singing for people with Parkinson's. These ideas are further tested out in an empirical study by some of the same authors. Fogg-Rogers et al. (2016) considered the value of group singing for people with experience of stroke or living with Parkinson's disease. They note that both groups experience reduced mood, social participation and quality of life due to their conditions and that communication difficulties affect 90% of people with Parkinson's and over a third of people with stroke. Their aim in this small qualitative study was to explore the experiences of people with stroke or Parkinson's participating in choral singing therapy and identify any factors that influence their involvement. Eight people recovering from stroke, and six with Parkinson's were recruited from a community music therapy choir. Feedback was also gathered from relatives of the participants affected by these conditions. Semi-structured interviews were conducted and thematic analysis revealed that many participants had unmet needs associated with their condition, which motivated them to engage in singing as a self-management strategy. Group singing was described as an enjoyable social activity, and participation was perceived as improving mood, language, breathing and voice.

3.4.3 *People affected by cancer*

As with singing for lung health and singing for Parkinson's, considerable interest has developed in the value of singing for people affected directly and indirectly by cancer, through the work of the Welsh cancer charity Tenovus. A valuable short film (see references) discusses the monitoring of members of Tenovus choir which demonstrates not only significant psychological and social benefits, but also that crucial bio-markers (that underpin feelings of wellbeing and relaxation, and are also markers of immune system activity) were improved. In the study referred to in the film above, Fancourt et al. (2016) showed that group singing can significantly reduce stress, improve mood and reduce cortisol, beta-endorphin and oxytocin levels in cancer patients.

In a multi-centre, single-arm preliminary study, the first of its kind, the researchers worked with participants from the 18 Tenovus choirs of over 1,000 people affected by cancer in South Wales. Some 251 volunteered and 193 were screened as suitable. No participant

was being treated with chemo- or radio-therapy at the time or on immunosuppressive medication. Participants comprised of carers (72 in total), bereaved carers (66), and patients (55). They were mainly white females with average levels of wellbeing, but social resilience scores lower than the average population. There were no significant differences in mood at baseline between the three groups. Previous studies with these choirs has shown that long-term involvement with them has reduced levels of anxiety and depression and improved quality of life. The team wanted to compare changes across time in the three groups and see if they differed, to understand whether singing was of value for any particular group.

The session was a 70-minute evening choir rehearsal, led by a trained leader in five choirs, in the usual community locations, comprising warm-ups, learning new and maintaining existing songs. Before and after choir, participants gave a saliva sample and completed questionnaires (Warwick-Edinburgh Mental Wellbeing Scale; the Hospital Anxiety and Depression Scale; and the Connor-Davidson Resilience Scale).

In all five centres and in all participants groups, results were positive. This demonstrates that singing is associated with a decrease in cortisol and increase in cytokine activity, possibly because the reduction in cortisol after singing reduced glucocorticoid suppression of the immune system, leading to general activation of the cytokine network and increased immune activity.

There were no significant differences between the three groups (individual or aggregate) on measures of mood, stress or connectedness. Mood was particularly found to increase for those who had lower mental wellbeing, and patients and carers (who also had the highest levels of depression) experienced the greatest short-term improvement in mood across the singing session. Larger mood changes were also associated with a lower pro-inflammatory response, which appeared to be independent of stress levels.

Limitations of the study are that there was no control group, however, there is evidence that cytokines do not routinely change across an hour in the absence of an intervention, and participants' stress levels were low at the outset start, implying that any acute stress simply abated over the following hour. Secondly, this was just a single session of singing and repeated sessions could impact differently. Thirdly, the participants were self-selecting and it is unknown if singing could benefit people who would not participate in a choir. Finally, participant cancer patients had different types of cancer and were at varying stages of treatment.

3.5 The value of singing for people with dementia in communities and in care settings

3.5.1 *Singing for the Brain*

This section starts by considering the Singing for the Brain initiative (see references). The idea that singing groups could be helpful for people affected by dementia was first developed by Creanne Montgomery-Smith with East Berkshire Alzheimer's Society branch. It was subsequently taken up by the Alzheimer's Society who promoted the development of Singing for the Brain groups across the UK.

Several studies have sought to evaluate the Singing for the Brain model. Bannan and Montgomery-Smith (2008) report an exploratory, process study of three group singing sessions for people with Alzheimer's (PWA) which is different in approach from the first two studies reviewed in this section, as it took place in a community setting; PWAs were accompanied by family carers, and the sessions were led by a musician rather than a music therapist. A limitation of the report, however, is that no details are given of the numbers of PWAs involved and the severity of their condition. The study is important, nevertheless, as it served to evaluate the concept of 'singing for the brain' being developed with a local Alzheimer's Society branch in the UK, and it contributed towards the UK

Alzheimer's Society promoting this initiative nationally.

Two further features are unique to this study: firstly in addition to using familiar songs, a specially composed new song was included to test whether people with Alzheimer's were able to learn new material, and secondly, the group sessions were filmed in order to observe the development of engagement with music over the three sessions. The repertoire for the singing sessions is described very fully and feedback via questionnaires is given on each of the three sessions.

The researchers felt it was difficult to conclude how the overall effect arises from the interaction of individuals, and that data is difficult to submit to clinical testing, relying as it does on the judgement of participants and especially carers, however, benefits were seen such as participants being better able to communicate, having a stronger voice after singing, and having improved memory recall. Most importantly, however, it was clear that the participants with Alzheimer's were able to learn and perform the new song:

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. (2008:73)

A more recent evaluation of 'Singing for the Brain', is reported by Osman, Tischler and Schneider (2014). They found that for both people with dementia and their carers, social inclusiveness and improvements in relationships, memory and mood were found to be especially important to participants. As well as enjoying the sessions, participants found that attending Singing for the Brain helped in accepting and coping with dementia.

A further small-scale qualitative evaluation of a Singing for the Brain pilot with people with a learning disability and memory problems or a dementia, is reported by Ward and Parkes (2015). Participant observation was used by the researchers, and patient and staff feedback was gathered. Ward and Parkes found a high level of enjoyment and engagement with the sessions and they considered they had potential to support easier communication and social engagement.

3.5.2 *Singing in care settings*

This section of the review is perhaps of greatest significance in relation to *A choir in every care home*. Description will be given of the singing sessions organised in these studies, to provide a concrete account of the practices actually evaluated.

Lesta and Petocz (2006) working in an Australian care home setting, noted a marked improvement in mood and social behaviour for PWD after participation in group singing programmes, to aid 'sundowning' (a period of disorientation and/or agitation as it becomes darker at the end of the day). A music therapist facilitated the singing of familiar songs over four consecutive days with four elderly female care home residents (aged 80-97 years with mid-stage dementia). There was one-to-one discussion between the songs. Here is their description in full:

The music therapist commenced the familiar group singing session with a welcome song. Following on from Whitcomb's (1994) suggestions for a "therapeutic milieu" during sundowning, the music therapist played and sang gentle, soothing waltz-tempo songs as well as individually favoured selections (Tomaino, 2002). Songs were paused for emphasis and focus, repeated to increase participation and promote security, and altered in volume and tempo to match the affect of the group. Additionally, the music therapist used imitation and modelling to support, extend, and reinforce resident response.

Singing was more or less continuous for 30 minutes, with positive verbalisations, hand clapping, *acappella* song verse interjections, and reminiscences from the residents, prompting pauses and verbal responses from the music therapist. A gentle farewell song brought the session to a structured close, and the residents were individually thanked for coming. Some residents chose to linger and chat with one another, while others left the room, all still being observed. At the close of the 15-minute post-test session, residents were assisted to move to the dining room for their evening meal. (2006:10)

The authors report marked improvement in social behaviour, such as participants sitting and walking together, giving one another repeated eye contact, moving to the music, as well as reminiscing with one another. There was also a significant decrease in non-social behaviour, as measured by observations in participants actively mumbling, sitting or wandering alone, as well as continuously touching their face or clothing. This is an interesting study in demonstrating the power of singing to assist in a very specific challenge associated with caring for people with dementia due to fading light in the evenings.

Svansdottir and Snaedal (2006) report a case-control study of group singing and dementia of Alzheimer's type undertaken in two nursing homes and two psycho-geriatric wards in Iceland. In total 46 patients (71-87 years) with moderate to severe dementia and a range of behavioural and psychological symptoms (BPSD) were recruited into the study and randomised to a music therapy or control group. With attrition the final samples for comparison purposes were 20 in the therapy group and 18 in the control. The account provided of the singing sessions, highlights that while the intention was to encourage participants to sing, this may not be possible for some elderly people who are severely affected by dementia. It is also important to see that while 23 people were involved in the singing intervention, the groups ran with only 3-4 participants at a time (as in the Lesta and Petocz study). This is also an important practical point regarding what is feasible in terms of delivery. In addition, the emphasis on familiarity and choice is also apparent:

Three or four patients participated in each session. A collection of songs, familiar to elderly Icelanders, were selected by the music therapist and used throughout the study. A selection of these songs was then chosen by the group and the therapist and each song was sung twice. Those patients not actively participating sat with the others holding the songbook and listening. In that way every patient participated actively or passively and it was possible to include patients in different stages of dementia in the same sessions. In between the songs the patients chatted with each other or with the patients.

In the sessions the patients and the therapist sang, accompanied by a guitar (the therapist) and various kinds of instruments (the patients) of their choosing. Initially, many of the patients were reluctant to use the instruments but subsequently they joined in with the others and seemed to enjoy the session. The instruments were also used for improvising with or without a theme. Sometimes the patients had an urge to move and dance in harmony (sic) with the music and that was allowed freely. (2006:3)

The therapy group received 18 sessions of music therapy three times a week for six weeks with each session lasting 30 minutes (ie a total of nine hours). To assess the effects of the music therapy, patients were rated for BPSD along seven dimensions by trained nurses blind to the group allocation, before the intervention, after the intervention and then a month later. Results are presented in detail but the major findings were:

- After six weeks there was a significant decrease in symptoms rated as activity disturbance in the therapy group but not in the control group. This effect was no longer apparent at a further four weeks follow-up

- After six weeks scores on a combination of three of the seven rating scales (activity disturbance, aggressiveness and anxiety) showed a significant reduction in the therapy group ($p=0.02$) but not in the control group ($p>0.05$). This difference was not maintained at follow up.

Unfortunately the account of how ratings were made is rather brief and it is not clear when or where the ratings were made. However, they were made by nurses trained in the assessment, with nurses rating the same patient on three occasions. If the changes seen are robust, and apply in general over time beyond the days when the intervention took place, the findings from this study are remarkable, as the intervention took place for only 30 minutes each session three times a week – in other words, for only an hour and a half each week. This must represent only a fraction of the time these patients would have been awake and active during the week, so the proportion of time given to the intervention might be approximately 1-2% of waking time per week. In addition the study shows that the effects of the intervention do not last once the activity ceases. This is hardly surprising and merely points to the need for such activity to be delivered on a long-term basis to maintain the beneficial effects.

Myskja and Nord (2008) report study on music and depression in an Oslo nursing home. Residents had had a music therapist conduct group singing activities with them for four years, but the service was withdrawn for almost three months after which the singing group resumed as before. A very careful description is given of the singing intervention and the guiding principles followed:

Twice a week music sessions (average duration 45 minutes each) were conducted in each of the three wards of the nursing home. The music therapy aide led the singing of familiar and preferred songs, accompanying the songs on the piano. The sequences of the songs were based on charting of music preferences both for the group and for individuals. Music preference was found through a method of systematic investigation based on questionnaires and the use of preference CDs, making the process of song selection more precise and specific. The repertoire of the music sessions was developed gradually from the preference principles. The music therapy aide sang and played the piano with a strong chordal style songs and music pieces pooled from results of preference charting to create a repertoire (...) (2008:33)

The intervention therefore consisted of 90 minutes per week over eight weeks, or a total of approximately 12 hours of singing activity.

Measurements of depression from 72 participants (53 of whom had a diagnosis of some form of dementia, with a mean age of 87) were made following a structured protocol by training nurses before the re-start of the singing group, and again two months after the music therapy sessions resumed. Depression ratings showed a significant fall following resumption of the music therapy condition, suggesting the singing activity was highly beneficial. The authors are careful to note that over this period staffing was stable and no changes occurred to the medication regimes. There were also indications that level of engagement in the singing activity was associated with the degree of improvement:

Measurement of depression levels showed a similar reduction in depression levels in all three wards in the music condition, compared with the no music condition. The reduction in depression showed a correlation to the degree of participation in the music therapy groups. High levels of participation were linked to a large reduction in depression. Low levels of participation in the music therapy groups were linked to advanced disease, more than to previous relationship to music. (2008:39)

The studies reviewed so far provide an encouraging picture of benefits associated with group singing for people with dementia/Alzheimer's. It is important to recognise, however,

that the studies above all have methodological weaknesses, and that more robust efforts to evaluate the benefits of singing for people dementia, especially in comparison with alternative interventions provide a more qualified picture.

Cooke et al. (2010a,b) report a randomized controlled, cross-over trial (a music intervention and a reading control group) undertaken with 47 participants from two aged-care facilities in North Brisbane providing low and high nursing care. The participants suffered from early to mid-stage dementia with documented behavioural issues/agitation. The majority were female (70%) and aged 75-94 (87%). Many had other illnesses, or were visually impaired, and wheelchair bound. They were randomly allocated into two groups: the first to participate in a programme of singing activity and then followed by a programme of reading; and the second to start with the reading activity and then followed by singing.

Both groups ran for 40 minutes, three mornings a week for eight weeks. A five-week gap followed and then a reversal of the groups took place for a further eight week period. The music group had 30 minutes of singing with guitar accompaniment, based on participants' music preferences, and 10 minutes of instrumental music for active listening; residents were encouraged to use instruments and move/dance should they wish to. The reading group was led by a research assistant and was interactive, so as to reflect the music intervention and contained selections of local news, short stories and quizzes. The form of the singing intervention delivered by experienced community musicians rather than music therapists is outlined as follows:

The intervention was a live music programme delivered by two musicians. Each music session involved 30min of musician-led familiar song-singing (with guitar accompaniment) and 10 minutes of pre-recorded instrumental music for active listening. Group music sessions were chosen over individual interventions as previous literature has shown group sessions to be effective in reducing agitation and anxiety (...) and in improving the mood and social behaviour of those with dementia. (...)

During both musician-led song-singing and listening of pre-recorded music, residents were encouraged to actively participate through singing/humming, playing instruments and, where appropriate, movement. (2010a:908)

Participants were assessed at baseline, mid and post intervention, using a number of validated instruments:

- Dementia Quality of Life, interview assessment
- Geriatric Depression Scale, interview assessment
- CMAI-SF – an instrument to measure behaviour disturbance
- RAID – an instrument to measure anxiety symptoms
- MMSE – an instrument to assess severity of dementia

With respect to agitation and anxiety, the conclusions drawn provide a salutary counter-balance to the general tenor of this review that singing interventions for older people are positive, and also in highlighting that singing was no more effective than an alternative reading intervention:

Overall, this study showed that participation in a 40-minute live group music intervention, involving facilitated engagement with song-singing and listening, three-times a week for 8 weeks, did not significantly affect agitation and anxiety in older people with dementia. There was no evidence to indicate that the music programme was more effective than the group reading activity. (Cooke et al. 2010a)

And similarly, with respect to depression and quality of life:

Participation... did not significantly affect levels of depression and QOL in older people with dementia. There was no evidence to indicate that the therapeutic use of

live music was more effective than a group reading activity. That said, however, results did suggest that both the music and reading group activities offered opportunities to improve sense of belonging, self-esteem and depressive symptoms in some older people with dementia. (Cooke et al. 2010b)

The lessons to be learned from this study are:

- Singing interventions do not necessarily lead to beneficial outcomes in general for groups of participants
- Singing interventions may be no more effective in general than other form of group activity
- Individual differences are apparent however and some participants may show benefits

Taken together, these principles suggest the need for flexibility in the provision of musical, creative activities and other forms of engagement which are sensitive to the circumstances, interests and health of each individual.

Camici et al (2013) ask: Does a 'singing together' group improve the quality of life for people with dementia and their carers? They found, despite the fact that PWD were deteriorating slowly over the course of the study on all measures (such as mood, behavioural and psychological problems) they and their carers' had high engagement levels, and quality of life remained relatively stable. Qualitative data gave strong support to the group having promoted wellbeing for all participants.

For carers, because their scores on anxiety, depression, stress and QoL remained stable at all points, it could be that the singing group acted as a buffer for them during a time when increases in depression, anxiety and stress, even if not at clinical levels, could have been expected. It must be remembered, however, that a reduction in negative mood or experiences may not be the same as an increase in wellbeing or happiness. Carers reported feeling socially included, and they experienced glimpses of their family member's 'old self', thus recognising the person behind the dementia, potentially strengthening the relationship and commitment to caring.

For the PWD, participation in a singing group challenged their own beliefs about not being able to sing and no longer fitting into 'normal' activities. They were able to take risks of learning new songs, rhythms and movements in a socially inclusive environment. It demonstrated that the commonly held belief that PWD are either not interested in or incapable of taking on new activities is not supported. As the intervention progressed, observations of foot-tapping, smiling, nodding and attention directed toward the facilitator, in addition to high levels of singing participation, provided a strong indication that the intervention stimulated a great deal of interest and enthusiasm.

The social experience of group singing with people experiencing similar problems was important. There were high levels of enthusiasm, which reflected the few opportunities for non-stigmatised socially inclusive activities available for this population. The atmosphere of the group and personal characteristics of the music facilitator made people feel safe and valued. Participants were immediately able to have a 'sense of purpose' and 'belonging' and the opportunity for new learning gave them a 'sense of fulfilment'.

There were a number of limitations with this study: it included just ten PWD and their family carers for 10 weeks, one afternoon a week; standardised measures appeared less successful in detecting change; and there was difficulty in obtaining reliable standardised scores on QoL and other psychosocial constructs from PWD with moderate to moderate/severe levels of cognitive impairment. The study concluded, however, that the Singing Together Group was a very positive experience for people with a dementia and their carers.

Dassa and Amir (2014) found that singing familiar songs elicited significant memories for PWA in middle to late stages of the illness. Although just a group of six participants studied over one month, conversations relating to the singing became extensive and spontaneous in response to the group singing experience. Furthermore, the group members expressed positive feelings after each singing session, with an increased sense of accomplishment and belonging. The researchers concluded that conversations can be facilitated more effectively when the therapist consciously selects songs significant to the histories of the participants. Singing served to strengthen the deteriorating capacity of spontaneous speech that is often prevalent in middle to late stage Alzheimer's.

Clements-Cortes (2013, 2014, 2015) reports a series of studies based on the Buddy's Glee Club project. This project based at the Bay Crest Hospital Community Day Care programme in Toronto, Canada. In the first phase of the study, 28 older adults with Alzheimer's or dementia attended a weekly singing group for 16 weeks. Interviews and questionnaires were used to evaluate the programme. For the assessments of general health, self-esteem, anxiety and quality of life, no statistically significant changes were found. The qualitative evidence gathered, however, served to identify five broad themes of perceived benefits: friendship and companionship; ease of engagement, feelings of happiness and being uplifted; feelings of relaxation and reduced anxiety and fun. In this respect, the findings are similar to earlier studies of perceived effects and benefits of choral singing (e.g. Clift and Hancox, 2001, 2010).

A second phase study (2014), involved participants from a long-term care home engaged in weekly group singing over 16 weeks. Participants varied with both 'cognitively intact' and 'cognitively impaired' residents taking part. A clear description is given of the singing programme and one important feature that extends the approaches described so far in earlier studies, was the opportunity for participants to perform:

A new weekly choir program in the long-term care facility was introduced for the purposes of this study and held on Friday mornings from 10:30 am to 11:30 am. This was led by two music therapists – the choir leader and a piano accompanist. The repertoire for the choir comprised different genres, including folk, jazz, musicals, music from the 1930s and 1940s, and songs requested by the participants. Each choir session began with a warm-up, followed by the singing of three to four songs per session. During the session, each song was divided by the choir leader to work on areas of need. At times, props and movement were included by the choir leader with the singing. At the end of the 14th session, there was a performance in the large lobby of the long-term care facility in which all participants led the audience in a sing-along. The program objective was for resident participants to discover and experience the joy of singing; this activity took place in a new environment that was safe and accepting, offering psychological, emotional, and social support from a musical experience. (2014:91-2)

For the evaluation, weekly assessments were made through observation, participant feedback and project administrator report. Overall, average weekly pre- and post-session scores for happiness and mood, energy, pain and anxiety showed positive changes for all or most of the 16 sessions. In addition, highly positive qualitative feedback was gathered from the group, with nine major themes identified. In line with previous studies of members of established choral societies and choirs:

(...) the choir experience helped participants gain a sense of community and a sense of purpose; it increased their confidence, mood, energy, and alertness; and it established a positive climate. Participants frequently commented on their love of singing, and they reminisced about their time spent in choirs during their youth and adult lives. Singing in the choir provided participants with a chance to interact socially with others, participate fully, and contribute to group goals as well as

facilitating special moments during the weekly sessions and during performances.
(2014:101)

In the third phase (2015) study, participants were again residents in a long-term care home with mild to moderate cognitive impairment or Alzheimer's. The singing programme is described fully and the appendix of the 2015 paper provides more details of the repertoire. As with the second phase study, the group was offered the opportunity to perform. A further feature of this phase, however, is that the 35 participants engaged in the singing programme represented three different groups: residents in long-term care with mild to moderate dementia; significant others of the residents, and others directly involved in setting up and running the activity. This diversity is an important feature and reflects the arrangement evaluated by Bannon and Montgomery-Smith (2008). It is also an important consideration in the context of *A choir in every care home*. It provides a model that care homes might wish to emulate in which relatives of residents, and members of local community choirs join in to support regular singing group activity in a care setting.

Assessment measures for group 1 (residents) and 2 (others) focused on changes in pain, mood, and energy from the start to end, and group 2 completed questionnaires at the three points, and were interviewed on perceived benefits of the choir for both themselves and residents at the end. Group 3 (study staff) were interviewed post-study on the overall experience and perceived benefits of choir participation. The main quantitative findings were:

- statistically significant reduced perceptions of pain over the course of the study for residents and their carers (more so in groups 1 than 2).
- increased energy and mood for both residents and significant others.

As with the earlier studies, the qualitative data highlight the broadly positive experience of all participants, with seven themes summed up in Table 5, with illustrative quotations coming mainly from relatives of people with dementia. This sums up the nature of the benefits experienced so clearly and succinctly and makes it clear that the experience of singing with their loved ones was highly beneficial and valued by partners and family members.

Särkämö et al. (2015) found that caregiver-implemented musical leisure activities, particularly singing, are cognitively and emotionally beneficial especially in the early stages of dementia. Singing was found to be beneficial for working memory, executive function, and orientation especially in persons with mild dementia and younger (under 80 years) age, whereas music listening was associated with cognitive benefits only in persons with a more advanced level of dementia. Both singing and music listening were more effective in alleviating depression especially in persons with mild, Alzheimer-type dementia. Särkämö concluded that musical leisure activities could be easily applied and widely used in dementia care and rehabilitation. Especially stimulating and engaging activities, such as singing, seem to be very promising for maintaining memory functioning in the early stages of dementia.

Ahessy (2016) studied 40 residents in both residential and day care who took part in a music therapy choir in a randomised control trial. He found that depressive symptoms in the music therapy group were reduced by 54%, mean quality of life score improved by 57%, and there was a statistically significant increase in cognitive functioning. All 20 participants in the treatment group felt that singing was good for them, and attributed their positive feelings to the choir; half of them said that the feeling lasted all day, and some for a week or more. Participation in the choir made them feel part of the community, improved their mood and made them feel valued, giving purpose in their lives. Interestingly, participants chose to learn new songs, and felt this was the main benefit of the choir. This demonstrates that older adults are still eager to learn new skills, and that novelty keeps their lives purposeful

and meaningful. The second most perceived benefit of the choir was social interaction. Almost 90% of the sample were female, and reported loneliness and isolation as issues affecting their health. The study concluded that a music therapist led choir was an effective psychosocial intervention for reducing depression and improving quality of life in older adults.

The study demonstrates that singing can have a very positive role to play in helping those who suffer from dementia and Alzheimer's to have a better quality of life and live more harmoniously with fellow residents and carers.

Table 5: Benefits of singing identified the third phase study of the Glee Club (Clements-Cortes, 2015)

Wellness domain	Theme	Example of theme
Social	Encourages maximized participation	<p>"It was amazing to see my mother start singing these songs without even looking at the lyrics, she just knew them. I could see everyone getting something out of it."</p> <p>"She [a resident] remembers the old songs, and when you tell her its Glee Club she's in a hurry to come."</p>
	Facilitates interaction and bonding	"For me, I looked forward to the bond/experience of participating in a choir with my dad. For me, it's great to see him singing and involved. I'm really glad we signed up".
Emotional	Promotes enjoyment and fun	"Every Wednesday I look forward to it very much especially with [my wife] next to me. Although her short term memory is gone she loves singing. And I think Glee Club is one of the best programs here."
	Encourages improved mood and attitude	<p>"Singing makes me feel good".</p> <p>"Singing makes me feel happier".</p>
Emotional & physical	Facilitates energy and motivation	"She's more energized after the session, she wants to walk and walk and walk and walk. It's like waking up all her muscles".
	Promotes stress release and relaxation	"She is calmer when she is singing".
Emotional & social & physical	Recognized as therapy	<p>"For her, she has some pain, but sometimes it diverts her. It's good, you know, music is really therapy".</p> <p>"There is no pain when I'm singing. When I'm feeling pain and I am singing the pain stops"</p>

Finally, a note of caution comes from a recent German study which compared a music therapy intervention with group singing and which showed that singing was not as effective in addressing issues of depression among elderly care home residents.

Werner et al. (2015) compared the effects of interactive music therapy and recreational

group singing (the use of music in a non-therapeutic context) on depression levels of residents in a nursing home. In a pragmatic two-armed, cluster randomised controlled study.

The participants were residents of two German nursing homes, not bedridden, 68% female, aged 60-100 (84 years average). A total of 117 participants were grouped into four clusters (based on their wards so as to differentiate between groups and avoid treatment contamination), were randomised to interactive group music therapy (62 people, 20 sessions of 40 minutes duration, twice weekly) or recreational group singing (55 people, in 10 sessions of 90 minutes duration once a week) In the music therapy group, participants had been at the nursing home, on average, 4.6 years, 79% were female, and 43% used medication for dementia. In the singing group, participants had been in the home, on average, 2.9 years, 56% were female, and only 7% used dementia medication. This difference means that there is a built in bias to the study which needs to be considered in relation the findings.

Depressive symptoms were assessed using the Montgomery Asberg Depression Rating Scale (MADRS) at baseline (47% with at least mild depression) and follow-up in the 6th and 12th weeks. As depression is common but often undiagnosed and untreated among elderly people, the researchers did not require a diagnosis of depression to be present. This served their goal to examine effects in the natural setting of a nursing home, including undiagnosed depressive symptoms, which may also have developed after admission. There was no blinding of assessors. A t-test for equality between both groups showed no significant differences relating to age or medication for depression. Change in total MADRS score was used as the primary outcome; in individual MADRS as secondary outcomes. Observations during the sessions were noted by the therapist and post session changes by the geropsychiatric specialist.

During the first 5 weeks depressive symptoms decreased in the music therapy group, but increased in the singing group - statistically, a significant difference corresponding to a small to medium effect size. Again after 10 weeks of intervention, depressive symptoms decreased in the music therapy group and increased in group singing, corresponding to a medium effect size. This suggest that effects of music therapy were greater in those with, than in those without, dementia.

Individually, there were decreases in concentration problems and pessimistic thoughts at week 6, corresponding to a small effect size, and inner tension showed a decrease in the 12th week. Feedback from the geropsychiatric specialist suggested increased happiness in more than 50% of the music therapy group, greater attention and motivated activation, and decreased agitation and aggression. The MTs log concurred. No adverse effects were reported for the music therapy group, but four of the singing group's depression worsened.

The results suggest that music therapy decreases depressive symptoms in elderly people in nursing homes more effectively than recreational singing. Furthermore, that music therapy attends to basic needs and resource-oriented development by focusing on social and individual competences, such as creativity. Its beneficial influence on symptoms of depression was seen in patients with and without dementia, emphasising its effectiveness in patients with and without comorbidity, and the positive effects of the person-centred approach, as oppose to the higher demands on focused attention by collectively singing instructed songs in a group.

The results suggest that MT can enhance residents' quality of life, satisfaction and happiness; they can experience self-efficacy and individual competence, establish motivation for coping with daily tasks, and better cope with grief, and group integration. To improve basic mood, activate the residents and decrease inner tension, the need of one-to-one care and burden on the staff can be reduced. The study showed greater benefits

during interactive MT in comparison to recreational group singing.

3.6 Care-giver singing

Chronologically, one of the first, and oft quoted, studies is by Clair (1996), who studied 26 people with dementia (PWD) in the late stages of the condition, who were no longer mobile, and with no discernible language. For 40 minutes a day for four days, patients had the investigators reading the newspaper, singing unaccompanied familiar songs, and sitting in silence with them. From observations, they noted that alert responses were more frequent during singing. They felt that singing is not contingent upon instrumental accompaniment, and that any caregiver can use singing to encourage responses and be stimulating.

Chatterton, Baker, and Morgan (2010) concluded that 'live' singing to PWDs may be an under-used but highly accessible resource for their caregivers, regardless of qualifications. In their review of literature, all the papers reviewed concurred that individual singing to PWDs can be effective in a variety of ways, and that music therapists are urged to empower professional caregivers to sing sensitively to PWDs during care-giving activities.

There are some very interesting studies on the effects of music for both care giver and receiver by Swedish researcher, Eva Gotell. Initially, with Brown and Ekman (2001), they reported on a single case study where the carer sang to the patient, which helped against being agitated, confused, aggressive and resistant. The caregiver also reported feeling an increased sense of connectedness and involvement with the patient during the singing.

The aim of Gotell's doctoral thesis (2003) was to illuminate the impact of singing and music on PWD and their caregivers, and to describe a concept based on caregiver singing. She found that patients displayed the ability to sing, play instruments, perform bodily movements and make jokes during the music events. While singing familiar songs, some patients recalled pleasant, distant memories, and after the music events, carers experienced a bonding with the patients, who seemed easier to care for. She found that when background music was playing, caregivers reduced their verbal instructions and narrating, while the patients communicated with an enhanced understanding of the situation, both verbally and behaviourally. Previously there had been difficulties understanding one another. In particular, when caregivers sang to the patients, a paradoxical influence was observed. Despite an evident reduction in the amount of verbal narration and description by the caregivers, the patients tacitly understood what was going on.

In her third study she observed that during usual morning care sessions, patients exhibited slumped posture, sluggish motion, listlessness, minimal awareness of their environment, and a poor ability to perform activities necessary for personal care. Both with background music playing and particularly during caregiver singing, patients displayed straight posture, strong and symmetric movements, and greatly increased sensory awareness of themselves and their environment.

In her collaboration with Brown and Ekman again in 2003, they extracted the same information on nine specific patients with late-stage dementia and five professional caregivers, giving greater detail on posture and movement. Caregiver singing in particular was very effective at drawing out capabilities that appeared to be lost in these patients, regaining skills necessary for daily living, and demonstrated that they could perform tasks with intention, purpose, and competence. Caregiver singing elicited a larger degree of mutuality in the interaction between patient and caregiver than was seen with background music.

In 2009, the trio studied the influence of caregiver singing and background music on vocally expressed emotions and moods in dementia care in severe cases.

Compared to no music, the presence of background music and caregiver singing improved the mutuality of the communication between caregiver and patient, creating a joint sense of vitality. Positive emotions were enhanced, and aggressiveness was diminished. Whereas background music increased the sense of playfulness, caregiver singing enhanced the sense of sincerity and intimacy in the interaction. Caregiver singing and background music can help the caregiver improve the patient's ability to express positive emotions and moods, and to elicit a sense of vitality on the part of the person with severe dementia.

The results further support the value of caregiver singing as a method to improve the quality of dementia care

Hammar et al (including Gotell) (2011), studied how PWD and their caregivers express verbal and non-verbal communication and made eye contact during getting dressed each morning, without and with music therapeutic caregiving (MTC). Findings revealed that during the situations without MTC, the caregivers led the dressing procedure with verbal instructions and body movements and seldom invited the PWD to communicate or participate in getting dressed. Patterns in responses to caregivers' instructions included both active and compliant responses and reactions that were resistant and aggressive, confused, and disruptive. In contrast, during MTC, the caregivers seemed interested in communicating with the PWD and solicited their mutual engagement. The PWD mostly responded to caregivers in a composed manner, by being active, compliant, and relaxed, though some were also resistant or incongruent. The authors conclude that MTC could be a way for PWD and their caregivers to successfully interact and co-operate during caregiving.

While the work reviewed in this section so far has focused on people with late stage dementia, Särkämö et al (2013) undertook a study to determine the practical applicability and suitability of coaching the caregivers of PWDs who have mild to moderate dementia, by utilising singing and listening to familiar songs in the everyday care. The coaching intervention was aimed towards training and motivating the caregivers on how to apply either joint singing or music listening with the PWD on a regular basis. During the sessions, the emotional state of the PWDs improved: positive emotions (happiness and energy) increased and negative emotions (tiredness, confusion, tenseness, fearfulness) decreased.

After the coaching period, both singing and music listening were experienced as highly beneficial by the caregivers, especially in improving the mood of the PWDs. In addition, singing was associated with improved alertness and experience of success whereas music listening was associated with an increased tendency for reminiscence. At the 6-month post-intervention stage, majority of the caregivers still provided musical activities regularly to the PWDs and regarded them as beneficial. Professional nurses were found to be most active in providing the music sessions and also reported the highest gains for the PWDs. Overall, the results suggest that music coaching is an applicable and useful method that could be widely utilized in dementia care and rehabilitation.

4 Discussion

4.1 Introduction

The purpose of this review was to support *A choir in every care home* by providing a review of existing evidence for the benefits of singing/choirs for older people/in care homes/links to the wider community. The remit from the Baring Foundation specified that this should include benefits for staff, family and friends, choir members as well as residents.

The review was conducted by the Sidney De Haan Research Centre for Arts and Health a research unit that is well placed to produce such a review given the contributions it has made since 2001 to the growing international research literature on this subject (See Clift, 2015, for an overview). Since the start of its work in 2005, the De Haan Centre it has created a repository of research on singing and wellbeing; networked actively with researchers in this field internationally, undertaken two reviews of the developing literature and pursued a wide range of original empirical studies with a particular focus of older people with enduring health issues.

For the purposes of this review, use was made of the existing database of research held within the Centre, but further searches were undertaken through online bibliographic sources such as Medline and Psycinfo with search terms: older people, singing, health, wellbeing and care. These searches were supplemented by use of Google Scholar and Researchgate to search for additional sources on singing and wellbeing. An examination of sources cited in recent publications was made to locate additional material. In addition, in the course of preparing this report, new reports continued to be published and information was provided via enquiries directly to researchers active in the field of music and health.

It is important, before considering published research evidence, to recognise that the idea that singing promotes wellbeing and health is widely accepted in practice. Across the UK, the last fifteen years has seen a proliferation of singing for wellbeing initiatives. The whole profile of community singing and an understanding of its benefits has also been hugely enhanced as a result of the work of Gareth Malone.

This review has often highlighted some of the shortcomings of the research evidence published to date, but whatever the degree of caution that researchers wish to attach to their findings, the fact remains many organisations and care settings provide opportunities for older people to sing. Filmed testimony from older people participating in such 'singing for health' groups amply endorse the value of regular singing for their wellbeing. Such groups would not survive and flourish if this were not the case. Examples of such existing projects and the documentary evidence produced from them is cited throughout the report and a listing of key sources given in the references at the end of the report.

4.2 Previous reviews of evidence on singing and health

Before the late 1990s very little research attention had been given to the idea that active engagement in singing could result in wellbeing benefits for participants. Beck et al. (1999) and Clift and Hancox (2001) mark the start of the currently growing body of empirical studies to directly address this issue. They mark also, two lines of research that have continued – firstly, in the Clift and Hancox study, the use of qualitative and survey methods to documents perceived benefits, and secondly, in the Beck et al. study, the use of objective indicators of wellbeing to demonstrate directly ways in which singing affects bodily functions as well as impacting on subjective elements of psychological and social wellbeing.

Since these studies, there has been a growth of interest internationally sufficient to support reviews of the literature on singing for wellbeing. Increasingly too, reviews that focus on the

effectiveness of music therapy and music interventions, and more broadly arts interventions in relation to health and social care for older people, have identified studies of singing as part of the corpus they have incorporated. A number of such reviews were consulted (see Table 1 above) They helped to focus attention on a selected number of studies involving older people that had been identified repeatedly in reviews and survived the use of inclusion/exclusion criteria and quality screens aimed at locating the most robust studies.

Clift et al. (2010) is the first such peer-reviewed mapping of group singing and wellbeing, and it offers useful reflections on the scope and quality of research published up until late 2009. Research to date they conclude '...has been highly variable with respect to scope, design, methods, samples and particularly the character of the singing activity investigated.' They argue that 'such variations make it difficult to draw any general conclusions beyond saying that there are suggestive indications that singing can help to promote a sense of personal and social wellbeing, and that it may be effective in promoting physical health.' (2010:9)

This picture appears unchanged when considering the most recently published systematic review by Reagon et al. (2016) on singing interventions with a specific focus on 'health related quality of life' (HRQoL). No fewer than 12 databases were systematically searched and a detailed process of screening against inclusion/exclusion criteria and the use of quality screening served to identify only 18 studies, most of which consider the value of singing for older people with both acute and long-term health issues. It is striking that the authors are still very mindful of the methodological short-comings of existing research on singing and health:

...the studies reviewed suggest that group singing in patients with chronic disease may contribute to improved or maintained HRQoL. However, given methodological limitations such as small sample sizes unblinded designs, lack of control, dropout rates, variable duration and frequency of singing, limited detail about qualitative methods and limited reflexivity, the conclusions drawn are tentative and there is a clear need for further research. Specifically the review suggests the need for larger, well designed RCTs as well as in-depth qualitative investigation (including longitudinal studies) to explore the mechanisms that underlie positive change through group singing as well as any negative effects. (2016:9)

4.3 Music therapy for older people with dementia

As a second source for identification of singing interventions for older people and particularly older people in care settings, consideration was given to reviews of music therapy for people with dementia. Table 2 gives details of eight reviews identified and the sources included within them which evaluate singing interventions.

Wall and Duffy (2010) in the earliest review considered are clearly positive about the impacts of music therapy:

In various research studies, music therapy has exhibited short-term effects on the behaviour of older people with dementia, with live, individualised music being most beneficial. Levels of agitation were reduced, including verbally aggressive and non-physically aggressive behaviour. Music therapy promotes positive effects in mood and socialization of patients diagnosed with dementia. These positive effects also extend to caregivers. Undoubtedly, healthcare providers have a role to play in the provision of music therapy. (2010:112)

The view coming from Wall and Duffy undoubtedly echoes the messages that come from the wide range of practical initiatives already mentioned that have organised singing activities for older people. Other reviews, however, were more robust in considering the quality of research on music therapy, and none more so that Vink et al. (2011) in their

Cochrane review. Vink et al. (2011) are fairly damning in their assessment of the quality of reporting in the ten studies identified:

Despite ten studies describing positive effects of music therapy, the studies reviewed demonstrated methodological limitations. The poor reporting of the results and poor statistical analysis impeded valid inferences.

Due to poor reporting we were uncertain of the methodological quality of the included studies. Most of the studies describe positive effects which however cannot be warranted due to methodological problems making interpretation of the results difficult. Little information was provided on randomisation methods and overall the studies consisted of small sample sizes and short intervention periods, increasing the risk of bias which may have led to an overestimation of the 'true' effect of the intervention. (2011:12)

Only two of the ten trials were concerned with a singing intervention, and as indicated in Table 2, both had been identified through earlier reviews of singing and wellbeing.

McDermott et al. (2012) are also generally critical of the quality of studies on music therapy and dementia, but they raise an important point that quantitative approaches to evaluation need to be supplemented with qualitative methods of assessment in order to appreciate benefits which standardised instruments cannot capture.

Another meta-analysis is reported by Vasionyte and Madison (2013) and further studies on singing are identified through it. They offer further interesting reflections on the value of music in dementia care but caution yet again that studies have methodological limitations, and suggest that in some circumstances, listening to music may be more beneficial than approaches involving active engagement.

They go on to make an interesting point in the context of *A choir in every care home*, that as more musical interventions are established, more opportunities may arise for larger more robust studies. Thus any coordinated initiative to encourage more singing in care settings should be planned with a substantial evaluation in mind.

A considerable increase in applying music interventions, which are inexpensive and have no known side effects, would provide an excellent opportunity for larger and better studies. This is likely to establish which forms of music interventions are most efficient and to help develop their effectiveness further for specific patient groups. (2013:1210)

4.4 **A review of research on singing and older people**

In addition to considering previous reviews to identify studies on singing and older people, searches were undertaken through existing databases (e.g. PubMed) and use was made of Google Scholar. The Sidney De Haan Research Centre over the years has also made direct contact with most of the researchers active in the field and we were also able to contact researchers directly to ensure that we were aware of any recently published research of relevance to this review.

In considering the research evidence on the value of singing for health, the review is selective and focuses only on studies that include older people, generally from the age of 60 above. People aged from 50-70 may be considered to be 'young old' and people aged beyond 70 may be described as 'old old'. More important than age, however, is whether an individual remains active and healthy as they age, or whether they are affected by one or more long-term health condition which affects their sense of wellbeing, mobility and capacity for independent living. Given the concern of the current project to consider the value of singing in the context of care, we were particularly concerned to ensure full

coverage of relevant studies conducted with residents in elderly social and healthcare settings.

In addition to these inclusion criteria, a number of related and additional exclusion criteria were set to screen out studies which were not of central relevance to the concerns here, even though they might contain important findings germane to the general case in support of singing for health. Studies excluded were those where:

- a substantial proportion of the sample was below 60.
- the singing intervention investigated was brief in character.
- the singing intervention investigated was individual singing.
- samples were very small (except in the case of singing for dementia)
- singing was one component of a music therapy intervention which included other musical activities, and consequently, the effects of singing per se could not be determined.
- the music therapy intervention involved the use of songs, but was not sufficiently described to be clear about the exact form of the activity.

In the review, substantial studies of group singing and older people were presented under five headings and the main findings will be discussed under each heading.

4.4.1 *Studies on older people voluntarily participating in established singing groups*

A substantial number of studies have involved people who are already members of choral societies, choirs or community singing group. The De Haan Research Centre for example conducted a major international study of singers in established choirs in Australia, England and Germany and a clear consensus emerged across the three countries that regular singing have benefits psychologically and socially. The average age of the membership of established choirs tends to be around the late 50s and early 60s, and so such studies have particular relevant to consider the value of singing for older people. This was particularly apparent in the Clift et al. Survey (Clift and Hancox, 2010) where people were dealing with on-going personal challenges to their health both mental and physical, but also the challenges of dealing with health issues in their immediate families or loss due to bereavement.

Smaller scale qualitative studies such as those conducted by Southcott and her colleagues in Australia, also underline the range of benefits older people experience. These appeared across a range of groups within different cultural communities in Melbourne. The work of Lourivouri and colleagues in Finland and Africa likewise demonstrates that the benefits of singing are common across cultures.

As noted earlier, given the increased interest in the value of singing for health, several substantial projects promoting singing for older people have been established in the UK, and two were considered: the Silver Song Clubs set up by Sing for Your Life and the Golden Oldies groups. Both projects have been independently evaluated and shown to have benefits for older participants. A survey conducted by Bungay et al. (2010) for several hundred participants in Silver Song Clubs is of interest however in showing that while most participants enjoyed the groups and looked forward to them, there were a small minority who were less enthusiastic. With respect to the idea of *A choir in every care home* this is an important point to consider. Not all residents in care settings may enjoy participating in singing activities, and so sensitivity to personal interests and tastes is needed.

Studies of established singing groups have inherent biases as participants are choosing to engage in an activity which they clearly find meaningful and enjoyable. It is hardly a surprise therefore if they report beliefs that singing is beneficial on many levels individually and socially. Consequently, in order to test more rigorously the hypothesis that singing has

benefits for health and wellbeing, researchers have been keen to set up projects in which people who have little or no experience of singing (at least in adulthood) are invited to participate in research on singing with standardised assessments of its effects. Such studies vary in scale, length, and nature of singing. Methodologically too, they vary in the details of design and the measures employed to assess effects. For this reason, it has proved difficult to synthesise results across an increasing number of such studies.

Nevertheless, two studies stand out as supporting the idea that regular singing has benefits for older people who were otherwise not engaged in singing. The study by Cohen et al. in the States is impressive in working with older people to establish a community singing group that was evaluated over a period of two years in comparison with a comparable (though non-randomised) control group. The range of measures employed were also vary appropriate given the concern to assess impacts on wellbeing and health, assessed both subjectively and objectively in relation to health service utilisation. The study is ground-breaking in showing benefits psychologically, socially and in relation to physical health. A striking finding was that participants in the singing group were less likely to fall during the time of the intervention compared with the comparison group. Considering the prevalence of falls in older people and their consequences for an older person's wellbeing, not to mention the costs to the health service, this finding deserves to be explored in further studies. Perhaps in the context of residential care, data on falls for residents participating in singing activities, compared to those who are not, may serve to test this important finding from the Cohen et al. study.

Despite the merits of the Cohen et al. study and its striking findings, the lack of a randomised control group is a weakness. This is addressed in a major study by Coulton et al. (2015) in which community dwelling people aged 60 and above took part in a randomised control trial (RCT) and were randomised to either weekly singing over a period of three months or to a 'usual activities' control. The findings were striking in showing that significant improvements took place in the mental health-related quality of life of older people in the intervention compared with the control, and even more importantly, this effect was sustained for a further three months following the cessation of the singing groups.

As we saw above in the comments from authors in previous reviews on singing and health research, there have been repeated calls for larger-scale, better controlled studies of the kind Coulton et al. have conducted.

4.4.2 *Studies on the benefits of singing for older people affected by illness*

All of the studies considered under the first two headings worked with broad cross-sections of older people who were already part of an existing singing group, or who were enrolled in a research project to explore the value of singing for wellbeing and health. While in all of the studies it is clear that at least some of the older people participating were living with existing health issues, the singing groups and studies were not set up with a particular health issue in mind. As work on singing and health has progressed, however, a growing literature has focused on the value of singing for particular health issues. These have included mental health problems, respiratory illness, Parkinson's, stroke, and especially dementia.

A number of recent studies of this kind are reviewed in this report, and the general finding has been that singing can be beneficial in very specific ways for older people with specific health conditions. For example, being beneficial for management of breathlessness among people with chronic obstructive pulmonary disease; or beneficial as a form of speech therapy for people with Parkinson's. The recent study by Fancourt et al. (2016) also shows that singing may strengthen immune system functioning for people with cancer and others affected by it as well as impacting on the biochemical markers of stress, relaxation and wellbeing.

Over and above these specific physical effects, these studies amply confirm previous survey and experimental studies in showing that regular singing promotes wellbeing and combats social isolation and loneliness. Long-term physical illnesses raise the risks of mental distress in form of depression and anxiety, and also of becoming detached from supportive social networks, and singing can help with some of the psychological and social consequences of illness.

These studies are of particular significance in the context of *A choir in every care home* as most residents in care settings will be affected by one or more long-term health issue. Singing is an all round positive activity which is likely to be of benefit in specific or general ways, whatever the pattern of an elderly person's health challenges.

4.4.3 *Studies on the value of singing for older people with dementia*

Dementia is perhaps the most obvious health condition increasingly associated with ageing. It is a mistake to think of dementia as a condition that only affects people in the 'older old' and 'elderly' categories, and yet prevalence does increase with ageing and most residents in care homes and nursing care are likely to have developed some degree of memory loss, in addition to other conditions affecting physical and mental wellbeing.

The studies reviewed in this section are of particular relevance to *A choir in every care home* as they demonstrate the feasibility of different models of group singing activity in care settings and provide evidence of the benefits of singing in line with common observation of such sessions in care settings. In addition, however, the more sophisticated studies have begun to explore the detailed parameters of interventions and possible interactions between such factors as: degree of dementia, size and composition of group, role of the facilitator, the nature of the repertoire, and most importantly of all, whether group singing as an activity is any more effective than other forms of musical engagement, or other alternative activities.

Another issue of particular significance in care settings is whether singing can be affective in managing distressing psychological and behavioural symptoms of dementia and so reduce or avoid the need for using pharmacological interventions.

The main lessons from these studies are perhaps in the fine details, as the ways in which singing activity might be set up in any care setting depends upon so many particular combinations of factors. General guidelines and principles can be followed but in the end the character of any activity will be unique to the given setting and the people involved and any benefits are to be judged in context with knowledge of the individual residents and their needs and interests.

4.4.4 *Studies focused on the value of singing by care-givers of older people with dementia*

The final section of this review of research studies focuses on the role of care-giver singing in the context of one-to-one care with people with advanced dementia. The work of Gotell, in particular, has shown that if carers sing to the person they are providing one-to-one care with at different times during the day, the quality of the interaction and of the experience of both cared-for and carer can be improved. More recent work by Sarkamo et al. (2013) indicated that care-giver singing on a one-to-one basis can be helpful even where the dementia is less severe. This work is of lesser relevance to the idea of encouraging more group singing in care settings but it recognises that there may come a time for individuals with dementia when the demands of attention and participation involved in group activities are too great. Even at that point, it seems, singing can have powerful effects in helping to enhance care and the wellbeing of people with advanced cognitive decline.

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5.2 Information and resources noted

Aesop <http://www.ae-sop.org/>

Baring Foundation Previous publications on the arts and older people.
<http://baringfoundation.org.uk/publications-by-topic/#Arts>

Bel Canto Chorus Senior singers programme in Wisconsin <http://www.belcanto.org/>
https://www.youtube.com/watch?v=sWGc0l_SgOs <http://www.belcanto.org/sing/senior-singers/>

British Lung Foundation Singing for Lung Health. <https://www.blf.org.uk/support-for-you/singing-for-lung-health>

Golden Oldies Song Clubs <http://www.golden-oldies.org.uk/>

Gresham college lecture Graham Welch <http://www.gresham.ac.uk/lectures-and-events/the-benefits-of-singing-in-a-choir>

Mark making Exploring the role of the arts in dementia <http://markmaking.arts.ac.uk/> & <http://ualresearchonline.arts.ac.uk/7176/>

Parkinson's Parkinson's and singing <http://www.parkinsons.org.uk/content/singing-groups-and-classes>

Promoting health Continunig work <http://scienceofcaring.ucsf.edu/health-public/let-choir-sing-lifting-our-voices-healthy-aging> <https://vimeo.com/68350034>

Sing for Joy Singing and Parkinson's www.singforjoy.org

Sing for your life Silver Song Clubs <https://www.youtube.com/user/SFYL1/videos>

Sing to live, live to sing <https://www.rbkc.gov.uk/leisure-and-culture/culture/sing-live-live-sing>

Singing for better breathing www.s4bb.org.uk

Singing for promoting the health of older people <http://scienceofcaring.ucsf.edu/health-public/let-choir-sing-lifting-our-voices-healthy-aging> & <https://vimeo.com/68350034>

Singing for the brain
https://www.alzheimers.org.uk/site/scripts/documents_info.php?documentID=760

Sing your heart out Singing and mental health, Norfolk
https://www.youtube.com/watch?v=PJyBqLbzpfc&feature=player_embedded

Soul music : <http://www.bbc.co.uk/programmes/b008mj7p>

Tenovus Cancer care choirs <http://www.tenovuscancercare.org.uk/how-we-can-help-you/sing-with-us/about-sing-with-us/> and <https://www.youtube.com/watch?v=6FclaqAHeA>

Working on *A choir in every care home*

Leader Evan Dawson, executive director Live Music Now

E: evan.dawson@livemusicnow.org.uk

Lead consortium

Live Music Now was founded in 1977 by Yehudi Menuhin and Ian Stoutzker CBE to train the best young musicians to give workshops in a range of challenging settings. It now delivers over 2,500 sessions each year, in care homes, communities, special needs schools, hospitals and more.

LMN project manager: Douglas Noble, strategic director for wellbeing

E: Douglas.Noble@livemusicnow.org.uk W: www.livemusicnow.org.uk

Sound Sense is the UK membership body and development agency for community music. It represents some 1,000 community musicians, promoting the value of the work and assisting in their professional development. Community musicians work in all areas of disadvantage, (health, social care criminal justice and more) almost a half of them with older people, largely through singing.

Sound Sense project manager: Kathryn Deane, director

E: Kathryn.Deane@soundsense.org W: www.soundsense.org

The Sidney De Haan Research Centre for Arts and Health, Canterbury Christ Church University is one of the UK's leading research units in the growing field of arts, wellbeing and health, and is known internationally for its work on the role of singing in promoting health and wellbeing through its research and community projects

SDHRC project manager: Professor Stephen Clift, centre director

E: s.clift@btinternet.com W: www.canterbury.ac.uk/research-and-consultancy/research-centres/sidney-de-haan-research-centre

Working group

The latest list of working group members is at W: www.achoirineverycarehome.co.uk

Arts sector

British Association of Music Therapists

Creative and Cultural Skills

Live Music Now

Making Music

Mindsong

Natural Voice Practitioners Network

Nordoff Robbins

Sing for Your Life

Sing Up

Sound Sense

Superact

Tenovus Choirs

Voluntary Arts

Welsh National Opera

Care sector

Abbeyfield

Age of Creativity

Age UK

Alzheimer's Society

Care England

Care Quality Commission

MHA

My Home Life

National Care Forum

National Activities Providers Association

Orders of St John Care Trust

Skills for Care

West Kent Dementia Action Alliance

Wellbeing

Arts and Health South West

University Winchester, Arts and Wellbeing

Creative and Credible

National Alliance for Arts Health Wellbeing

Mental Health Foundation

Sidney De Haan Research Centre

South East Arts and Health Partnership

Royal Society for Public Health

Working papers planned

This list is subject to change as the initiative develops

1	Jul 15	Gathering 1: preliminary learnings and later observations
2	Dec 15	Survey results: musicians in care home; care homes with music
2a	Dec 15	Surveys: raw data
3	Dec 15	On quality and frameworks
4	Jan 16	Trends in the care home sector
5	Dec 15	Gathering 2: learnings and observations
6	Jun 16	Research review
7	Feb 16	How to run a great campaign
8	Mar 16	Case studies; analysis
8a	Apr 16	Case studies of singing
10	Apr 16	Summary of findings
11	May 16	Music and the Care Quality Commission
12	Jun 16	Gathering 2: learnings and observations
13	Jun 16	A Choir in Every Care home: phase 1 final report

This working paper

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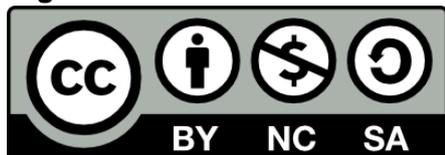
Authors

Stephen Clift is director; Trish Vella-Burrows assistant director; and Rebekah Gilbert a research student at the Sidney De Haan Research Centre for Arts and Health at Canterbury Christ Church University

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