

The significance of choral singing for sustaining psychological wellbeing: findings from a survey of choristers in England, Australia and Germany

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ABSTRACT: Previous research has highlighted the possible benefits of active participation in singing for wellbeing and health. Shortcomings in the literature are the lack of a common understanding of wellbeing and health, and the absence of a theoretical model of the causal mechanisms linking singing with wellbeing. The present study aims to address these shortcomings through a large cross-national survey of choral singers based on the World Health Organization definition of health and utilizing measures developed by the WHO Quality of Life project. A total of 1124 choral singers drawn from choirs in Australia, England and Germany completed the WHOQOL-BREF questionnaire to measure physical, psychological, social and environmental wellbeing, and a 12-item 'effects of choral singing scale'. Written accounts of the effects of choral singing on wellbeing and health were given in response to open questions. A high degree of consensus emerged on the positive benefits of choral singing, with women significantly more likely to endorse the value of singing for wellbeing and health compared with men. A significant but small correlation between psychological wellbeing and positive effects of choral singing also emerged for women, but not for men. Particular attention is given to qualitative accounts of the effects of choral singing on wellbeing from 85 participants with relatively low psychological wellbeing as assessed by the WHOQOL-BREF, and high scores on the singing scale. Four categories of significant personal and health challenges were disclosed by members of this

group: enduring mental health problems; family/relationship problems; physical health challenges and recent bereavement. Their accounts also suggested six 'generative mechanisms' by which singing may impact on wellbeing and health: positive affect; focused attention; deep breathing; social support; cognitive stimulation and regular commitment.

KEYWORDS: Choral singing, psychological wellbeing, WHOQOL-BREF, survey, cross-national, health

A recent systematic mapping of the empirical literature on singing and wellbeing identified 35 papers for review (Clift, Hancox, Staricoff & Whitmore, 2008). The studies varied considerably in terms of focus, method, sample characteristics, sample size, nature of the singing investigated, data gathered and approach to analysis. The studies are so diverse that a coherent synthesis of the evidence on the value of singing for wellbeing was not possible. Rather, studies were categorised according to their design and the nature of data gathered and the evidence they provided critically evaluated.

Qualitative studies of singing and health

A number of qualitative studies on the benefits of community singing have been undertaken with diverse samples of singers, and these provide evidence from subjective reports on a range of social, psychological, and health benefits associated with singing. Bailey and Davidson (2002, 2005) for example, interviewed choir singers from a range of social backgrounds in Canada; Silber (2005) explored the impact of a singing group established in a women's prison in Israel, and Watanabe (2005) explored the experience of individual engagement with Karaoke lessons and performance in Japan.

The work of Bailey and Davidson is of particular relevance to the study reported here. In their first study (2002) they interviewed members of a small choir set up in Montreal for homeless men and four themes emerged repeatedly in the men's accounts:

- Group singing alleviated depression and enhanced emotional and physical wellbeing.
- Performing to an audience encouraged a sense of personal worth and provided a means of re-engaging with wider social networks.
- The choir provided a supportive context for the men in which they could develop their social skills and achieve collective goals.
- Singing is mentally demanding, and required the men to concentrate and learn new material in order to perform. Such concentration also directed their attention away from internal preoccupation with their problems.

In further work, Bailey and Davidson (2005) interviewed members of a singing group in an economically disadvantaged area, together with more socially advantaged and affluent choral singers. The themes identified in the 2002 paper are considered to be broadly applicable to singers irrespective of social context and the character of the repertoire being sung,

but some differences of emphasis did emerge. Both disadvantaged and more privileged singers, for example, highlighted the broadly 'therapeutic' value of participation in singing, particularly in relation to creating energy, positive emotional experience and relaxation. For other themes, some important differences emerged, particularly in relation to cognitive dimensions and the impact of singing in a group. For the more marginalised participants, singing provided a stimulating activity which helped to promote concentration and an ordering of their inner mental space. For the middle class singers, in contrast, a greater stress was placed on developing musical knowledge and skill which enabled them to meet the challenges of classical repertoire and gain a sense of achievement.

Questionnaire surveys of singing and health

The idea that singing can be beneficial for wellbeing and health is also supported by surveys in which choral singers have been asked to respond to a range of statements about the effects of singing. Beck, Cesario, Yousefi and Enamoto (2000) report that 67 per cent of semi-professional choral singers in their survey agreed or strongly agreed that 'Singing has contributed to my personal well-being', and Clift and Hancox (2001) report that 71 per cent of singers in a university choral society agreed or strongly agreed that singing was beneficial for their 'mental wellbeing'. Clift and Hancox identified six dimensions of benefits associated with choral singing from a Principal Components Analysis of their questionnaire data. These were labelled (in order) as: 'benefits for well-being and relaxation', 'benefits for breathing and posture', 'social benefits', 'spiritual benefits', 'emotional benefits' and 'benefits for the heart and immune system'. There is also a clear link between the set of components emerging from this analysis and the model of positive benefits of group singing emerging from the work of Bailey and Davidson (2002, 2005). For the first and most important factor of 'wellbeing and relaxation', Clift and Hancox found that women had higher scores than men, suggesting that women experience or perceive greater wellbeing benefits from singing.

Bailey and Davidson (2003) also conducted a questionnaire study to compare the perceived benefits of 'active' participation in music (singing in a choir), 'passive' listening to music with others, and 'passive' listening to music alone. Choristers from three choirs ($N = 121$) participated in the survey and were invited to complete a 100-item questionnaire described as measuring attitudes related to music. Included in the questionnaire were three sets of 22 items concerned with the 'holistic health effects of music in the three participation categories'. Additional items relating to choir practices, performances, voice quality and conducting techniques were included to 'camouflage' the purpose of the questionnaire.

Bailey and Davidson report that a number of the group singing items received higher ratings than equivalent listening items, and indicated that singing 'promotes heightened arousal on a variety of behavioural dimensions.' These items were: 'improves mood', 'is an exhilarating activity', 'gives me a sense of achievement', 'is a creative experience' and 'gives me a kind of high'. By contrast, the listening alone items which received higher ratings were 'indicative of processes which promote stress reduction and restoration of a homeostatic state.' These items were: 'reduces stress', 'releases suppressed emotions', 'is physically relaxing' and 'releases tension'. Bailey and Davidson conclude from their findings "that different levels of music participation can have differential yet beneficial effects." (p. 223).

Experimental studies of singing and health

In addition to qualitative studies and questionnaire surveys, more objective, experimental research has also assessed the impact of singing on physiological variables assumed to have wellbeing and health implications. Several studies, for example, have assayed levels of immunoglobulin A in saliva taken from participants before and after singing, and reported significant increases, pointing to enhanced immune system activity (e.g. Beck et al., 2000; Kuhn, 2002; Kreutz, Bongard, Rohrmann, Grebe, Bastian, & Hodapp, 2004).

Two quasi-experimental studies have also reported positive health benefits from group singing for elderly people using standardised measures and objective indicators of wellbeing and health. Houston, McKee, Carroll and Marsh (1998) report improvements in levels of anxiety and depression in nursing home residents following a four-week programme of singing, and Cohen, Perlstein, Chapline, Kelly, Firth and Simmens (2006) found improvements in both mental and physical health in a group of elderly people participating in a community choir for one year.

Limitations of existing research and the present study

The existing research literature has substantial limitations (see Clift, Hancox, Staricoff, et al. 2008). Many of the studies are small-scale and essentially exploratory and only one study has independently replicated and improved upon a previous study (Kreutz et al., 2004 replicating Beck et al., 2000). The main shortcomings of this corpus of research are the lack of a common conceptual understanding of wellbeing and health, and the absence of a fully elaborated theoretical model of the causal mechanisms linking singing with wellbeing and health.

A further limitation of particular interest and relevance to the study reported below is the lack of attention to the potential significance of sex in relation to choral singing and its effects. The systematic review revealed that 19 of the 35 papers considered reported research on group singing. Three studies were concerned with single-sex singing groups, and the rest included both sexes. However, four studies failed to report the numbers of men and women in their samples. In the 13 studies giving details of sex composition a total of 763 singers were investigated with 72 per cent women and 28 per cent men. The only study to examine sex as a factor in relation to their findings is the survey reported by Clift and Hancox (2001). As noted above, they found evidence that women reported stronger wellbeing benefits associated with singing than did men.

The present study aims to address these limitations in the previous literature through a large-scale cross-national survey assessing the views of choral singers in England, Germany and Australia on the possible effects of singing on wellbeing and health. While the project was initiated by the Sidney De Haan Research Centre in England, research colleagues in Germany and Australia expressed an interest in using the same instruments in a cross-national collaboration. All three countries are affluent democracies, and marked differences between them were not expected. Rather, the cross-national dimension to the study was seen as providing a basis of testing the generality of findings across three independent national samples of singers.

The study is based on the World Health Organization's definition of health (WHO, 1946) as "a state of complete physical, mental and social wellbeing and not merely an absence of illness or infirmity" (p.100) (and uses a cross-nationally validated quality of life instrument – the WHOQOL-BREF – developed by the WHO Quality of Life project (Power, Harper, Bullinger and the World Health Organization Quality of Life Group, 1999). For a detailed description of the study, methods and findings see Clift, Hancox, Morrison, Hess, Stewart and Kreutz (2008).

More specifically, the present paper presents findings from a newly constructed scale assessing the perceived wellbeing effects of participating in choral singing, and explores the relationships between this scale and the WHOQOL-BREF measure of psychological wellbeing. In the construction and analysis of this scale, careful attention is given to the question of differences attributable to sex. It was expected, on the basis of the findings reported by Clift and Hancox (2001) that women would endorse the wellbeing effects of singing more strongly than men.

In order to explore further the value of choral singing for health, some illustrative examples are given of written comments about singing and its effects from choristers who report strong wellbeing benefits from singing but whose general psychological wellbeing appears relatively low. Attention is given to the challenges some of these choristers face in their lives which may account for their relatively lower psychological wellbeing. Their comments also serve to highlight a range of mechanisms, some of which have already been identified in previous research, through which singing can act to promote personal wellbeing.

METHOD

Participating choral societies and choirs

The sample consisted of 1124 choral singers drawn from 21 choral societies and choirs in England ($N = 633$), Germany ($N = 325$) and Australia ($N = 166$). In England, a sample of choristers involved in an on-going community singing project for elderly people also participated. The overall response rate was 61 per cent.

Most of the choirs in the survey sing major choral works from the Western classical repertoire from the fifteenth to twentieth century. Some choirs sing a more eclectic repertoire including well known songs from musical shows and films. Only six of the 21 choirs are auditioned and the remainder are open to all comers.

Several of the choirs have been established a long time. The *Stuttgarter Liederkrantz* in Germany is the oldest choir in the survey, founded in 1824, followed by the English *Ashford Choral Society* founded in 1857, and *The Queensland Choir* in Australia set up in 1872. Societies that have continued in existence for this length of time indicate the appeal of choral singing from the nineteenth to the twenty-first centuries. There are also some recently established choral societies and choirs in the study: the German *Ensemble ad libitum Stuttgart* was formed in 2002, and *The Silver Singers*, Gateshead, England and *The Esplanados*, Brisbane, Australia were set up in 2005.

The Questionnaire

The questionnaire was structured in three parts. The first part asked for personal information and details of the respondents' involvement with music and singing. The second section focused specifically on the effects of choral singing and started with three open questions on the effects of singing on quality of life, wellbeing and health:

1. What effects, if any, does singing in a choir have on your quality of life?
2. What effects, if any, does singing in a choir have on your psychological and social wellbeing?
3. What effects, if any, does singing in a choir have on your physical health?

These questions were worded carefully to avoid being leading, and to indicate that effects might be positive or negative or that there may be no effects at all. The questions were also focused on the respondents' own health, rather than asking about possible effects of singing on other people's health.

These open questions were then followed by 24 statements about choral singing using items defining the first major 'wellbeing and relaxation' component reported by Clift and Hancox (2001) and items from the 'Singers' Emotional Experiences Scale' devised by Beck et al. (2000). The instruments devised by Clift and Hancox, and Beck et al. could be criticised for including only positively worded items, which could help to reinforce a positive response bias. In the present questionnaire, therefore, twelve items were positively worded and twelve negatively worded, and participants responded on a five-point Likert scale from 'strongly disagree' to 'strongly agree.' Following a Principal Components Analysis (see below) scores on 12 of these items were summed to form a single 'singing and wellbeing' scale with a high degree of internal consistency. Scores on the scale range from 12-60 (see below for details).

The third section of the questionnaire contained the WHOQOL-BREF. This was designed to assess four major life quality domains: physical (e.g. How much do you need medical treatment to function in your daily life?), psychological (e.g. How much do you enjoy life?), social (e.g. How satisfied are you with the support you get from your friends?) and environmental (e.g. How satisfied are you with the conditions of your living place?). The questionnaire has been widely used internationally and has high levels of reliability and validity (e.g. Skevington, Lofty, & O'Connell, 2004; Hawthorne, Herrman, & Murphy, 2006). It was considered especially suitable for a cross-national survey as official WHO versions of the questionnaire are available for use in Australia, Germany and the UK. Attention in this paper is confined to the psychological wellbeing scale. This consists of six statements to which participants respond using five-point Likert scales (the wording varies by item). The item scores were summed to provide raw scores on a scale ranging from 6-30, and these were transformed following WHOQOL-BREF guidelines to a scale ranging from 4-20.

Questionnaires were distributed to members of participating choirs during May 2007 for completion at home and return in a sealed envelope.

Ethics

The study received ethical approval through ethics committees in the collaborating universities in each country. Participation was entirely voluntary and questionnaires were completed anonymously. It was assumed that singers would find the survey of interest and this was reflected in the care taken to provide answers to the open questions. A report based on a preliminary analysis of the data gathered was made available to all respondents after completion of the survey.

Analysis

Numerical data from the questionnaire were analysed using SPSS 16. Principal Components Analysis was applied to the 24 singing items, for the total sample and for six country/sex groups. The results for the first unrotated component provided justification for constructing a summed scale using 12 items to assess perceived wellbeing effects of choral singing. Comparisons between men and women in each country and within the total samples were made using independent t-tests. Product moment correlations were computed between the singing scale and the WHOQOL-BREF psychological wellbeing scale. To explore the issues addressed by this survey more concretely, attention is given to the comments written on the questionnaire by respondents with relatively low scores on the psychological wellbeing scale, but high scores on the singing scale. A simple thematic approach was adopted to identify examples of life challenges which may explain the relatively low wellbeing scores, together with comments identifying possible mechanisms which link singing with beneficial outcomes for wellbeing.

Findings

The average age of choristers was relatively high ($M = 57$ years ($SD = 15$) with a third aged 60-69 and a fifth aged 70 and above). Women substantially outnumbered men (72 vs. 28 per cent). Choristers reported engagement with choral singing for a mean of 27 years ($SD = 11$ years); 42 per cent reported having had singing lessons; 62 per cent played a musical instrument and only 6 per cent were told as children that they could not sing.

With respect to health, 79 per cent were 'satisfied' or 'very satisfied' with their health (with 21 per cent less than satisfied) and 87 per cent described their health as 'good', 'very good' or 'excellent' (with 13 per cent describing their health as less than good). Just under half of the sample ($N = 536$, 49%) reported long-term health problems, the most commonly expressed issues being problems with pain, emotional and mental health problems and problems with breathing.

Principal Components Analysis applied to the choral singing items identified a strong first component with substantial loadings from 12 items (e.g. improved mood, enhanced quality of life, greater happiness, stress reduction, and emotional wellbeing). Table 1 gives the loadings of these items in separate analyses of data from six country x sex sub-groups and demonstrates the robustness of this pattern. It is striking that a sense of 'happiness' produced by singing is the item which achieves the highest loading for the total sample, and is also the highest loading item for four out of the six sub-groups.

Table 1: 'Effects of singing' questionnaire: first principal component for six country x sex groups (12 items)

	Total sample	English Men	English Women	Australian Men	Australian Women	German Men	German Women
Makes me feel a lot happier afterwards	.75	.74	.73	.66	.83	.72	.78
Singing gives a positive attitude to life	.74	.74	.74	.68	.78	.72	.74
Singing has improved well-being/health	.74	.68	.77	.76	.81	.71	.69
Singing releases negative feelings	.73	.74	.75	.69	.82	.71	.73
Singing helps make me a happier person	.73	.72	.78	.78	.74	.69	.68
Singing doesn't give me a 'high'	-.70	-.71	-.71	-.74	-.61	-.73	-.67
Choir positively affects quality of life	.70	.66	.75	.64	.66	.74	.60
Relaxing and helps deal with stress	.69	.61	.70	.67	.70	.66	.74
Doesn't release negative feelings in my life	-.69	-.72	-.68	-.65	-.74	-.67	-.65
Singing makes mood more positive	.69	.68	.71	.71	.71	.71	.60
Doesn't help general emotional well-being	-.67	-.69	-.68	-.44	-.75	-.73	-.62
Singing gives no deep significance	-.65	-.65	-.65	-.68	-.63	-.66	-.69
Variance accounted for	50.1	48.4	51.9	46.2	53.8	49.5	46.7
Cronbach alpha	0.91	0.91	0.92	0.89	0.92	0.91	0.90

These items were used to construct a single summed measure of the perceived effects of singing on wellbeing (Cronbach alpha = 0.9 for both sexes). A high mean score confirmed that a large majority of choristers, in each country, and among men and women, agreed that singing has a positive impact on personal wellbeing (see Table 2). Differences between the sexes were apparent, however, and as expected women gave higher scores than men in each country and in the total sample. For the English and German samples and for the total sample, this difference is statistically significant.

Table 2: Singing scale statistics for country x sex subgroups

England		Australia		Germany		Total	
Men	Women	Men	Women	Men	Women	Men	Women
N = 134	N = 449	N = 51	N = 103	N = 100	N = 192	N = 285	N = 744
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
48.1	6.8	50.2	6.7	49.5	5.6	50.7	6.9
				47.0	7.0	49.5	6.6
$t(584) = 3.19, p < 0.001$		$t(154) = 1.10, p \text{ ns}$		$t(291) = 2.99, p < 0.005$		$t(1033) = 4.58, p < 0.001$	

Range is 12-60

On the WHO psychological scale, a majority of respondents scored well above the scale midpoint indicating ‘good’ to ‘excellent’ self-assessed psychological wellbeing (see Table 3). A small proportion of choristers, however, gave low scores, which could indicate mental health difficulties. For the ‘frequency of negative feelings’ item for example, just over six per cent of participants gave ratings which indicated that they ‘very often’ or ‘always’ experienced ‘negative feelings such as blue mood, despair, anxiety, depression.’

Table 3: WHOQOL-BREF Psychological wellbeing – percentage responses to individual items (total sample)

	N	1	2	3	4	5
		Low				High
Enjoy life	1112	0.2	1.3	15.1	67.2	16.3
Life is meaningful	1097	0.7	2.8	17.5	54.3	24.6
Able to concentrate	1111	0.1	1.9	31.6	56.9	9.5
Accept bodily appearance	1113	1.1	4.5	18.3	51.8	24.3
Satisfaction with self	1108	0.9	4.7	21.1	60.3	13.0
Frequency of negative feelings	1112	0.7	5.4	27.7	54.9	11.2

Items are scaled such that high scores reflect high wellbeing. For the frequency of negative feelings item, for example, a high score means that the frequency of negative feelings was low (1 = always, 2 = very often, 3 = quite often, 4 = seldom, 5 = never).

As Table 4 indicates, women in the English and German samples and the sample overall scored slightly lower on the psychological wellbeing scale. These differences in the English and total samples were statistically significant.

Table 4: WHOQOL-BREF Psychological wellbeing scores

England		Australia				Germany				Total	
Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
N = 139	N = 463	N = 54	N = 106	N = 101	N = 201	N = 294	N = 770				
<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
15.7	1.8	15.3	2.0	15.5	2.2	15.1	1.8	15.6	2.1	15.7	2.1
$t(603) = 2.17, p < 0.05$		$t(160) = 1.42, p \text{ ns}$				$t(301) = .35, p \text{ ns}$				$t(1065) = 1.99, p < 0.05$	

Range is 12-60.

As statistically significant sex differences were found in the total sample for both the singing scale and the WHOQOL-BREF psychological wellbeing scale, relationships between these two measures were examined within sex. A significant correlation was found between them for women (total sample) ($r = 0.23, p < 0.001$), but not for men ($r = 0.06, p \text{ ns}$). This pattern was also replicated independently in each national sample (see Clift, Hancox, Morrison et al., 2008 for details). The correlations for women are very low, however, with no more than five per cent shared variance between the two scales. Effectively, therefore, there is little or no relationship overall between the two scales for either sex, and this sug-

gests that all possible combinations of high and low scores on both scales are relatively similar in frequency.

To explore this finding further, data from the WHOQOL-BREF psychological scale and the effects of singing scale were divided as near to the 33rd and 67th percentiles as possible and the two recoded scales were cross-tabulated. Respondents in the lowest third on the psychological wellbeing scale, and the highest third on the effects of singing scale were considered of particular interest for understanding the potential impact of singing on wellbeing. These are people who report that their general psychological wellbeing over the previous two weeks had been relatively low compared with the sample overall, but who also report a relatively high impact on wellbeing from singing. Eighty-five people in the total sample fell into this category: 15 men and 69 women (one respondent did not disclose their sex); 51 English, 19 German and 14 Australian.

Just under two-thirds of this group ($N = 55$, 65%) reported long-term problems with their health, compared with 49 per cent in the total sample. With respect to psychological wellbeing, over three-quarters of the group ($N = 66$, 78%) gave answers of 'quite often', 'very often' or 'always' in response to the question 'How often do you have negative feelings such as blue mood, despair, anxiety, depression?' This compares with 34 per cent of the total sample giving this range of answers (see Table 3).

Written comments from choristers relatively low in psychological wellbeing but strongly endorsing the wellbeing effects of singing

In answers to the open questions detailed above, approximately one fifth of this group gave concrete information on significant challenges in their lives impacting on their sense of personal wellbeing. Respondents' comments about these challenges could be readily categorised under the following headings: mental health problems, significant family problems, physical health difficulties and bereavement. The following examples are indicative of the issues identified and also clearly express the benefits which the respondents felt they gained from singing in a choir.

Enduring mental health problems – This was the most commonly expressed challenge, with six respondents disclosing problems with clinical depression or anxiety and a further six alluding to difficulties with depression. In the following examples singing is described as being helpful in the process of recovery or in the management of these problems:

I have had to stop working due to an on-going medical condition (bi-polar disorder). I have had several episodes of this. Requiring varying lengths of time spent in hospital, followed by months of time needing support for depression and lack of self-confidence. Being a member of this particular choir has lifted my self-esteem again and restored self-belief. [English female 54.]

I had a full time panic attack last week. Tried some swimming exercises which made it worse – then sang in the car for half an hour. By the end my heart rate and breathing had returned to normal, neck and shoulders relaxed, stomach unknotted. Generally find it unwinds and relaxes me. Always feel 'looser' after rehearsals. [Australian male, 38.]

Significant family/relationship problems – Problems within the family or close personal relationships were also a source of significant stress for the following two participants, and singing helped them to cope with these continuing 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.]

Able to enjoy companionship and makes me feel I am able to do something. My husband is depressed and this helps me to 'keep going'. Lifts mood and helps to forget problems in life. [English female, 65.]

Significant physical health issues/disability – Physical health problems can also result in significant emotional challenges that can increase risks of mental health difficulties. The following participants describe the consequences of stroke and insomnia, with the first indicating how singing helped him:

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.]

Severe insomnia. I wake up between 3 and 4am. Most of the time I can't go back to sleep or only shortly before I get up again. Consequently, I am extremely tired in the evenings and suffer mood swings. [German female, 67.]

Recent bereavement – Finally, two respondents disclosed recent loss of close family members. Bereavement substantially increases risks to emotional and mental health, and for these choristers singing clearly helped them to cope with significant personal loss:

My husband died three months ago so all the questions about negative feelings etc. are distorted by this fact. One of the greatest supports in my life at this difficult time is the [choir I belong to]. I think choral singing is fantastic for emotional health. [English female, 64.]

In today's world, choral singing offers people one outlet from stress and worry. It is an experience not to be missed, and has helped me through the recent loss of my daughter. [English female, 59.]

The accounts given above also suggest some of the ways in which singing can help address challenges to psychological wellbeing, and this issue was explored further by coding all examples in which respondents themselves offered some explanation of how singing provided psychological and emotional benefits. This analysis identified descriptions of at least six generative mechanisms linking choral singing with wellbeing and health, most of which have been previously identified in the research literature (e.g. Bailey and Davidson, 2003, 2005, refer to improvements in mood and the role of distraction). The purpose here is not to present a thorough-going documentation of the incidence of comments indicative of these mechanisms, but simply to provide illustrations of the intuitive hypotheses employed by singers to explain how singing can be beneficial.

A given mechanism may have more than one outcome for wellbeing, and two or more mechanisms may have a similar impact. The mechanisms are as follows: positive affect, focused concentration, controlled deep breathing, social support, cognitive stimulation, and regular commitment. Each of these mechanisms serves to counter factors and processes that are potentially detrimental to wellbeing and health. The general principle at work here appears to be one of re-balancing or counter-action.

Positive affect – Respondents in this group commented that singing made them feel happier and improved their mood. 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 which 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.]

Focused attention – In addition to generating positive feelings, singing can be a very demanding activity involving focused concentration. The following respondents explicitly link this feature of singing as an activity to blocking personal preoccupations with sources of worry, and promoting relaxation and the relief of stress:

Singing in a choir puts troubles ‘on hold’, as concentrating on the music requires all one’s attention. [English female, 65.]

It has great effects. It helps me to ‘switch off’ everyday concerns and also to concentrate. Result: I can relax. [German female, 56.]

Controlled deep 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.]

Social support - Choral singing is also an intrinsically social activity, involving processes of social co-operation and co-ordination. The value of group membership and friendly relationships within the group were widely commented on. In addition the following respondents are explicit in suggesting that singing in a choir offers them social support, which serves to ameliorate feelings of isolation and loneliness, and provides a sense of wider

'community' and social inclusion:

The effect of singing with a group helps to make friends, so this has widened my horizons quite a bit, and gets me out and about more. The support you receive from other people helps in general wellbeing. [English female, 78.]

The 'community' aspect of choral singing is particularly significant. A choir is a community of singers drawn from all walks of life, coming together to make a unified impact. That teamwork and disciplined focus on a thing greater than ourselves (namely a choral work) is an example of how the world might/could be! [Australian female, 66.]

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 completely prevent senile dementia! [English female, 57.]

Regular commitment – Finally, like all worthwhile activities, choral singing requires regular practice and so involves a regular commitment to attend rehearsal, which motivates people to avoid being physically inactive:

It makes me get up in the morning [rehearsals are during the day] and puts me in a good mood for the rest of the day and makes me more alert. [English female, 65.]

Making the effort to attend choir practice on wet, cold evenings instead of watching TV must be better for health. [English female, 69.]

DISCUSSION AND IMPLICATIONS

This study contributes to a process of addressing the shortcomings of previous research by undertaking a large scale cross-national survey of singers in choirs in England, Germany and Australia. The study is based on the WHO definition of health, and uses a rigorously developed cross-national instrument for assessing health related quality of life, the WHOQOL-BREF. In addition, the study allowed for the construction of a new scale for assessing the wellbeing effects of choral singing, which demonstrates substantial construct validity and internal consistency.

The results confirm previous findings from Clift and Hancox (2001) and Beck et al. (2000) that a majority of choristers experience singing as beneficial for wellbeing. Nevertheless, there is variation in the extent to which singers endorse the idea that singing has benefits

for their wellbeing, and an important finding is that women are more likely to report stronger benefits compared with men. This confirms the earlier finding of such a sex difference reported by Clift and Hancox in a small-scale study of a single choir. The current finding is particularly strong, given that the difference between women and men appears independently in each national sample of choristers studied. Inspection of individual items in the scale shows that women were more likely than men to strongly agree that singing made them feel happier, made their mood more positive, helped improve wellbeing and health, and helped them relax and deal with stress. Similarly, they were more likely to strongly disagree that singing doesn't help to release negative feelings.

Such sex differences are intriguing, and merit further study. They may reflect a broader sex difference in emotional sensitivity and expressiveness, with women and men experiencing similar benefits, but with women expressing themselves more strongly in this respect. These differences may also help towards explaining why choral singing should be an activity which tends to attract more women than men. Certainly, in the present sample of choirs, women were in the majority. On the other hand, the men in the sample are actively involved in choral singing, and while they endorse the wellbeing benefits of the activity, it may be that other factors, such as the value placed on music or the opportunity to socialise, are stronger motivators for their involvement.

The findings from the WHOQOL-BREF also demonstrate that a large majority of singers rate their quality of life and their health as good or better. This is an impressive finding, especially given the high average age of the sample, and the fact that a large proportion of people were in retirement. This may partly point to the health-promoting benefits of choral singing, but it should also be recognised that as the participants get older, the sample may increasingly represent the more active and healthy members of their age group, as individual choristers retire due to health and mobility problems or a fading voice. It is notable, however, that a minority of participants do give low scores on the WHOQOL-BREF scales, which indicate that they are not satisfied with their quality of life and health. For the WHO psychological wellbeing scale, approximately 10 per cent of the sample scored below the scale's midpoint suggesting that they may be coping with significant mental health challenges. A small sex difference also emerges on this scale with women reporting lower average levels of wellbeing.

A further finding from this survey which has not been reported so far in the literature is the sex difference in the correlation between perceptions of the wellbeing benefits of singing and self-assessed general psychological wellbeing. In the total sample and for each country independently, a significant positive correlation was observed between the two scales for women, but not for men. Higher scores on the singing wellbeing scale were associated with higher general wellbeing scores. Correlations are of course difficult to interpret from a causal perspective. This finding may indicate that women with higher general wellbeing are more likely to experience wellbeing benefits from singing, or it may suggest that the experience of wellbeing benefits from singing contributes to a broader sense of psychological wellbeing. It is important not to make too much of the correlation found, however, as it represents no more than five per cent of shared variance. What the finding more strongly indicates is that for women perceptions of the benefits of singing are substantially independent of general psychological wellbeing as measured by the WHOQOL-BREF. The fact that no significant correlation emerged for the men further underlines this point. For

this reason, attention was given in this paper to a subgroup considered to be of particular interest in exploring the value of choral singing for wellbeing and health – namely those choristers with low general wellbeing who highly endorsed the benefits of singing.

Within this subgroup, many participants disclosed personal challenges in their lives that have compromised their sense of personal wellbeing. Nevertheless, it is clear that participation in singing has been of considerable benefit to them. More importantly, from a theoretical point of view, the choristers' accounts provide valuable insights into a number of possible causal mechanisms linking singing with improved wellbeing and health. These findings are consistent with insights coming from previous qualitative research on singing and wellbeing (see Clift, Hancox, Staricoff et al., 2008), and reflect some of the processes highlighted in the work of Bailey and Davidson (2005), Beck et al. (2000) and Kreutz et al. (2004). This study builds on previous research, however, in highlighting the fact that in any mainstream choir or choral society, there will be members with existing health challenges and that singing is actively employed in a number of ways to help in coping with or addressing these challenges. The specific mechanisms identified should also be the focus of more detailed research to explore their significance and inter-connectedness within a range of singing groups. How for example, do the mechanisms of controlled deep breathing and focused attention relate to one another and impact upon experiences of wellbeing? If singing is widely perceived to have benefits for breathing, would singing as an activity be useful for people with compromised lung function (e.g. asthma or chronic obstructive pulmonary disease)? Research by Engen (2005) and a recent study reported by Bonilha, Onofre, Vieira, Prado, and Martinez (2008) provide some evidence in support of this possibility.

The analysis of themes in the qualitative data reported here is preliminary and considers only a fraction of the available accounts provided by the total sample of choristers. A fuller, more sophisticated analysis is currently in progress using the MAXQDA2007 qualitative analysis software programme (<http://www.maxqda.com>), (see Clift, Hancox, Morrison, Hess, Kreutz, & Stewart, 2009 for findings from choristers' accounts of the effects of choral singing on physical health). Once completed, this analysis will allow for emergent themes to be organised into a more detailed model of mechanisms and beneficial impacts, and relate the information provided in response to open questions, to the structured data available from the rest of the questionnaire.

In addition to this study helping to highlight the wellbeing and health benefits associated with choral singing, it also has a number of implications for the wider issue of encouraging more people to participate in choral singing for the potential benefits it can bring for wellbeing.

It is clear that many participants in the study have had long experience of involvement in choral singing, and many have had singing lessons and can play an instrument. In addition, very few of the respondents were told as children that they could not sing. It is not difficult to imagine, therefore, that the ability of people in their later years to benefit from group singing derives in considerable part from the skill and confidence that comes from a life-time involvement with music and singing. This suggests that if singing is to be a potential resource in later life that the early foundations are crucial, as are opportunities throughout early and mid-adulthood to engage in community singing. It is of interest in this respect that in both the Bailey and Davidson (2005) and Silber (2005) studies, in which special efforts were made to recruit disadvantaged adults into singing projects, those most ready to

engage did have some background in music. The issue of having a good foundation in music and positive encouragement to sing appears to be particularly relevant for boys, as the results of this study underline the well-known pattern that men are less likely to be involved in choral singing than women.

Although this study strongly indicates the importance of a history of engagement in singing, this is not to say that adults with little or no previous experience of singing might not find it enjoyable and beneficial if they were to have the opportunity and encouragement to participate in their local communities. And indeed, there were members in the choirs studied with relatively little previous experience of choral singing. A further implication, therefore, is that more efforts are needed to expand community opportunities for involvement in singing, and to educate adults about the value of such engagement on a musical, personal and social level, and also for the benefits it can potentially bring for wellbeing and health.

The study contributes to building an evidence base to support greater public investment by local government and health authorities in community music and singing provision in the interests of promoting wellbeing and health, especially from midlife onwards. Given that throughout the world, increased life expectancy has resulted in a continuing demographic shift towards larger proportions of elderly people in national populations, there is a need to look afresh at the opportunities available to help encourage people to remain physically, socially and mentally active post retirement. It is argued that singing is a valuable activity in all of these respects and deserves to be more widely recognised as such.

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