

Singing and its Effect on Well-being

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Group singing is a popular cultural activity. A study conducted by the National Endowment for the Arts (NEA) in 1997 found that the most popular public arts activity in the U.S. is singing in a choir (NEA, 1998). With this in mind, there must be more to group singing than just an enjoyable pastime activity. Research has shown that group singing has an effect on mood (Unwin, Kenny, & Davis, 2002), and physical health (Bungay, Clift, & Skingley, 2010). Singing has also been credited as having a positive effect on the treatment of neurological disorders. Group singing is a musical activity that has been used with marginalized populations and has a positive effect on inmate happiness (Cohen, 2009) and an improved quality of life with homeless men.

The purpose of this paper is to review the literature on the effects singing has on well-being. Ryff (1989) in her analysis of well-being states that there are multiple dimensions: positive relations with others, self-expectance, autonomy, environmental mastery, purpose in life, and personal growth. The review includes studies of homeless men and women, senior citizens, prison inmates, professional and amateur singers, and persons with neurological disorders and the effects singing has on these population segment's well-being. The purposes, procedures, and outcomes of these studies are described.

Singing and its effects of homeless men and women

Modern society has adopted an elitist model of performance. In western culture performers of music are often well trained, well-rehearsed, and required to execute their craft with technical precision and creativity (Bailey & Davidson 2002). With this in mind, Small (1998) states:

Our present day concert life whether ‘classical’ or ‘popular’, in which the ‘talented’ few are empowered to produce music for the ‘untalented’ majority, is based on a falsehood. It means that our powers of music making for ourselves have been hijacked and the majority of people robbed of the musicality that is theirs by right of birth... (p. 8).

To that end, researchers have examined the effects of group singing on people’s well-being in amateur settings in an effort to bring to the forefront the impact that singing has on all people – not just the chosen few. The research in this area should not be confused with an established high-level of performance quality, however the focus is on the act of singing. Bailey and Davidson (2002) studied the effects of group singing with members of a homeless men’s choir in an effort to more clearly understand the effects singing has on individuals with low levels of musical training. Of the individuals that were interviewed, the following categories of adaptive characteristics emerged: clinical-type or therapeutic benefits; benefits related to group process; benefits attributable to choir/audience reciprocity; and benefits derived from mental stimulation. However, the interview group was significantly smaller than the actual size of the choir (seven members were interviewed out of the 19 member choir) which caused concern for the researchers.

Bailey and Davidson (2005) studied another choir formed of homeless and impoverished people. There were cultural, gender, director, membership, performance style and sponsorship differences between this newly researched choir (Choir 2) and the choir of homeless men (Choir 1). 8 members of the 25 member group were selected to be interviewed. The semi-structured interview resulted similar adaptive characteristic categories: clinical-type benefits; benefits of group process; and benefits related to choir/audience reciprocity. The cognitive component was less evident in this second choir. A third group of 8 singers from a variety of choral ensembles

was selected as the focus group. The agenda for the focus group was based on information previously collected from Choirs 1 and 2. The middle class singers were not aware of this. The focus group was asked to reflect on their personal experience verbally and by writing on a form that had 7 headings relating to the data collected from Choirs 1 and 2. Overall, the results from the focus group members were consistent within the group suggesting that there were no substantial differences based on training or choir type (Bailey & Davidson, 2005). This study provides evidence that singing fosters emotional health and that it doesn't matter what musical expertise level one has attained to experience an increase in well-being.

Singing and its effect on prison inmates

Researchers have also examined the effects singing has on prison inmates. Cohen (2009) conducted two experiments so she could compare the well-being measurements between a group of prison inmates singing in a choir and prison inmates not singing in a choir. Using the Friedman Well-Being Scale (FWBS) as a dependent measure, measurements were taken before and after performances of two prison-based choirs. The FWBS measures composite well-being and five subscales: emotional stability, sociability, joviality, self-esteem, and happiness (Friedman, 1994). The first choir was an inmate only choir that performed in the correctional facility and the other was an inmate-volunteer choir that performed outside the correctional facility. The 10 inmates that didn't sing served as the control group. Quantitative and nominal data from this investigation indicate that choral singing may enhance inmate singers' well-being (Cohen, 2009). The social interactions between prisoners and volunteers at the public concert, which was held outside of prison grounds, played an important part in the inmates' perceived well-being. The male general population inmate singers (GPIS) had the highest composite well-being scores. This group also rehearsed more than the others. Cohen (2009) suggests that the

GPIS choir could have been more familiar with the selections and may have developed a stronger relationship with the conductor resulting in a relationship to the mean differences among the three groups' scores. The researcher concludes that participating in choral performances, especially ones outside in the community, benefits inmates' perceived well-being.

Group singing while incarcerated not only positively affects males' well-being; females experience similar increases in overall well-being. Silber (2005) considered the idea that participation in a choir might have unintended therapeutic benefits and assist those with personal and relational difficulties. She examined the impacts that participating in a vocal ensemble had on a group of female prisoners in an Israeli women's prison as well as the potential benefits such participation might have on dealing with the issues surrounding many prison inmates.

Limitations of participation were also explored.

Subjects for the study were all female; reasons for limiting the sex of the subjects were multiple. Women offenders are often ignored in research and underrepresented in the literature. Women are often more willing to and place a higher importance on personal relationships and emotional expression. In addition, previous studies have shown that positive results are more apparent in female prisoner populations.

The choir met weekly for 8 months. Sessions lasted 90 minutes each and were devoted to learning songs that were popular in the prison. Each choir rehearsal was videotaped and the director kept a journal documenting the progress of the choir, the interactions between the choir members and director and amongst the choir members themselves. After a period of instability in the make-up of the group, often due to illnesses, court appearances, conflicting prison duties, and unexplained absences, a stable group of seven emerged. Findings from the study indicate

that participation in the choir was beneficial. It allowed the prisoners to form new bonds, and accept criticism without resistance.

Singing and its effect on the elderly's well-being

So far we have discussed the use of group singing and its effect on well-being in marginalized populations. Recently, Bungay, Clift, and Skingley (2010) researched the effects the Silver Song Club Project, 32 clubs located throughout England, has on well-being in club participants, ages 60-99. A survey was given to all of the clubs and 369 respondents returned them from 26 clubs of which 77 percent of the participants were female. One objective of the study was to gain the participants' views of an effect of song clubs on their perceived health and well-being. A participant interviewed in an initial study by Bungay and Skingley (2008) referred to how singing made them 'feel better'. One participant said:

I don't know quite how to put this. You can go in and if you feel a bit, you know, as if you can't be bothered but once you are there... you find you are laughing in there and you do feel better (p. 65).

In the most recent study by Bungay, Clift, and Skingley (2010), 61 percent agreed that singing in the club made them 'feel better'. The qualitative data in the Bungay and Skingley (2008) study also suggests that singing could positively affect physical health since singing involves regular deep breathing and increased oxygen intake. The researcher points out that more research must be done before any definite claims can be made.

The evidence suggests that, Silver Song Clubs (or a model similar to this in the United States), may be effective in promoting the health and well-being of aging persons. These activities reduce social isolation and loneliness, promote a sense of well-being, and help prevent or delay the social problems associated with old age .

With the growth of the senior population expected to continue into the next millennium the demand for health care and services related to aging will continue to grow. As researchers continue to look for ways to improve the quality of life for seniors, they are paying closer attention to the concept of 'well-being'. Mills and Brown (2004, pg. 4) describe well-being as something "which builds on a social and environmental view of health, and recognizes the inter-relatedness of environmental responsibility, social equity, economic viability and cultural development." The arts are viewed by many as being able to contribute to a person's overall well-being and are being relied upon to share the responsibility with other services to respond to the needs of seniors.

Despite the fact that arts programs are being seen as a viable player in the senior services arena, their success is constantly being questioned. When issues of funding arise, debates are framed in terms of 'evidence-based' arguments, with a demand for quantitative evidence to show the efficacy of these programs; qualitative evidence is seen as 'anecdotal' and thus trivialized in importance.

Lally (2009) hoped to provide a qualitative evaluation of a thirty-week workshop series in her examination of the Australian choral ensemble Sweet Tonic. In addition she reflected on the evaluation of the program's success and the ability to show "hard evidence". The importance of qualitative evidence is also examined.

Subjects in the Sweet Tonic choir ranged from ages 51 to 83. They were all in good health, which was made necessary by the fact that participation required subjects to stand for the majority of the weekly three hour practice sessions. The rehearsals began with 35 participants, but due to a number of reasons, the group stabilized to 26 members. The rehearsals included physical warm-ups, vocal exercises, and learning songs. Prior to the beginning of the rehearsals,

the researcher and research assistant conducted focus groups to gather demographic and background information about the participants, including their reasons for enrolling in the program, what they hoped to gain by participating, previous experience with musical activities and involvement in other artistic endeavors. This information was used to design a questionnaire that was distributed to subjects at the end of the workshop series. In-depth interviews were held with a select group of participants to get first-hand accounts of the workshop and its impact on the lives of the participants.

Participants reported they felt benefits from the physical requirements of the weekly rehearsals, including the singing, stretching, breathing and vocal exercises. Several participants reported improvements in fitness and flexibility. Participants also reported positive benefits to mood, relaxation and self-esteem. An increase in self-confidence was shown as well. The benefits of being a part of a group included decreased feelings of isolation for many of the participants and an overall sense of group solidarity.

In-depth interviews from two of the participants reveal how far reaching the impacts of participation in the group had on them. Sharon reported the group improved her self-confidence and feels both emotionally and physically healthier. She reported her friends and family say she is looking the best she has in years. She also used singing as a way to alleviate stress. Beth reported her self-confidence has improved as a result of her participation and she is motivated to take up other activities after the completion of the workshop.

The Sweet Tonic program's funding was extended - thus assuming the success of the program was demonstrated to the funding bodies. The quantitative results from the questionnaire may have been the evidence to sway the funding bodies but the most powerful evidence was in the personal narratives of Sharon, Beth, and other participants. There is an inherent negativity in

the language used to describe first-hand accounts like those of Sharon and Beth. Anecdotal is often used to describe these narratives and in turn trivializes them. It has been said that economic and social policy is too complex to be subjected to the black or white nature of quantitative research. There is a need to move away from the negativity of language used to describe the value of qualitative research to support the value and efficacy of arts activities.

Wise, Hartmann, and Fisher (1992) examined a retirement home chorus with 49 members. Their goal was to understand the role the chorus played in the daily lives of these seniors and to develop a description of the chorus based on these findings. The researchers were interested in how the chorus members might differ from those in the retirement community that did not participate in the chorus. A larger goal was to examine the relationship between choral music and how it related to successful aging and what role it played, if any.

A survey was distributed to the 55 members of the retirement community chorus at one of the group's practice sessions. The purpose of the survey was explained and members were encouraged to return the survey a few days later. The survey was also distributed to members of the community who were not in the chorus. These people would make up the control group. They were randomly selected and stratified by gender and marital status. 49 surveys were returned.

Results of the survey indicated that the demographics of both groups did not differ significantly. Questions were asked of the musical background of both groups and the surveys completed by the chorus members indicated they had a more diverse musical background than those who did not. The chorus members reported previous experience with singing and instrumental music. This suggests a relationship between musical experiences of early years as it relates to continued participation in later years.

Atchley's (1989) continuity theory suggests that successful aging is related to the pursuit of activities, behaviors and pastimes experienced in early life. The survey's findings that chorus members have been engaged in musical activities, including choral music performance is consistent with continuity. The continued benefits most likely arise from the satisfaction gained from mastering the activity, in this case, singing, as well as the prevention and minimizing the effects of aging, both psychological and physical.

Singing and its effect on growing music professionals

When people who are young and people who are old meet, it can sometimes create mixed emotions in both parties. One group may have difficulty understanding the other. Singing is an activity that bridges the generational gap. Goals of music education and music therapy programs are numerous. Hall (1990) describes the philosophical basis for the revisions to university music education and therapy programs that occurred in the early 1990s. These included intellectual vitality; the constant analysis and review of courses and curricula as well as the goal of educating non-traditional students, including non-English speakers, students from a diverse socioeconomic background and culturally diverse backgrounds; the concept of a professional community, where teachers work together with students and colleagues to form partnerships and a professional conscious, incorporating ethics into the teaching standards.

Included in the umbrella of diverse populations are the cross-generational programs that have existed since the 1970s. These programs have paired college student and school aged children with senior citizens. These pairings allowed students to better understand the process of aging and to dispel some of the stereotypes associated with seniors. Educators designing programs for a variety of ages can glean useful information from these pairings. Aging studies indicate that what is important to successful aging is how younger people perceive the older

person and how they define their societal status and position. Also important is a supportive social environment.

Music educators have also shown an interest in these pairings. Positive outcomes of these intergenerational music programs have included a bridging of the generations, allowing seniors to learn (or relearn) musical and singing skills and the opportunity for students to learn and appreciate music from other eras. Bowers (1998) sought to examine the attitudes of senior citizens and university music education and music therapy students towards each other through their interactions in the intergenerational choral experience.

Subjects included 15 senior citizens and 15 university students majoring in either music therapy or music education and some non-music majors enrolled in an elective choral music ensemble. The program lasted two semesters and rehearsals were weekly. Music was selected that would appeal to both groups, with the intent that each group would enjoy singing and value the other group's music.

The student facilitator planned the weekly rehearsal activities so as to maximize the interaction between the senior/student pairs. Interviews, dance lessons and group reporting were all utilized. Following the conclusion of the group's winter concert a picture taking session occurred so all would have a keepsake to remember the time they spent together. A holiday party also followed the concert where the seniors organized a craft session, with each making an ornament to exchange.

A second semester began and the groups were organized and schedules determined. Rehearsals continued in the same fashion as they had during the prior semester, in preparation for a February concert. After this concert a party was scheduled. Refreshments were provided and the entertainment consisted of a viewing of the videotaped concert.

The success of the inter-generational choir program was tracked using informal measures including attendance across the program, in addition to the formal survey data regarding the attitudes towards each other. Attendance data showed the seniors attended whenever possible, reinforcing the belief that they enjoyed the program.

The results of the program were notable in that the interactions between the generations can produce positive outcomes for both groups. Commonly held stereotypes about seniors were dispelled when the younger generations were given the opportunity to get to know and appreciate them. The university students reported feeling a strong attachment to their senior partners and others in the group and expressed an interest in maintaining contact beyond the completion of the choir program, with many exchanging phone numbers. When given the opportunity to speak freely at the final concert, the seniors also expressed how much the program meant to them. This reinforces the belief that participating in the choir allows seniors to age successfully, for it gives them a sense of purpose and provides them a supportive social environment, which McTavish (1971) reports as being a component of successful aging.

Singing and its effect on people who are hospitalized

There seems to be evidence in the literature for those able to participate, singing can increase ones overall well-being. It is important to note that not being able to actively participate doesn't exclude one from the benefits of live music. Researchers including, Longhi & Pickett (2008) investigated the physiological responses of children hospitalized long-term to live music. Being hospitalized is often a scary and stressful time. Pediatric patients between the ages of six months and four years seemed to experience more significant distress. The study participants included, 21 long-term pediatric patients (14 boys and seven girls) from a London children's

hospital. Two groups were formed based on the age of the participants. The 11 children ranged in age from 3-36 months and the other group of 10 children ranged in age from 4-14 years.

Eight songs emerged from the input of parents, caregivers, nurses, family, and whenever possible the children. The songs included “Twinkle Twinkle Little Star” and “Hush Little Baby”. In addition to the lullabies, the musician also played classical guitar pieces. The music sessions took place in the hospital and were attended by the child, musician, staff member, and family member, when available. No special instructions were given to the child and the music sessions were not associated with any relaxation method.

The main component of the music session was the singing and typically lasted an average of 30 minutes. The live musician gauged the level of energy from each child and adjusted his/her performance dynamic. Before and after each session, the heart rate and oxygen saturation levels were recorded using standard pulse oximeter which is routinely used to monitor patients during hospital stays.

A three way analysis of variance (ANOVA) was applied to evaluate the effect of age and gender on the heart rate measures and later oxygen saturation levels before and after the music sessions. There was no significant interaction found when the heart rates were analyzed. However, the oxygen saturation levels yield a different set of data. The ANOVA included one within factor, oxygen saturation (i.e. before and after the music session) and two between factors, age (i.e. younger than four years of age, and older than four years of age) and sex (i.e. female and male). A significant main effect of oxygen saturation was found ($F(1, 17) = 7.806, p < .012$), suggesting that the children’s oxygen saturation level increases significantly at the end of music session compared to before the session started (Longhi & Pickett, 2008). This research suggests

that live soothing music facilitates the increase in oxygen saturation levels which has been found to improve the physiological and psychological state of pediatric patients.

Singing and its effects on people with neurological disorders

Researchers have also showed interest in discovering the effects singing has on a person's well-being when they are faced with a neurological disorder. Wan, Rüber, Hohmann, and Schlaug. (2010) sought to review the recent evidence on the potential health benefits of singing. They discovered that singing might mitigate some of the speech impediments associated with neurological conditions. Singing and speaking are behaviorally similar and share neural correlates, which suggest that singing might be used as a treatment modality for the aforementioned disorders.

Singing can serve as a therapeutic tool because it is a universal form of expression akin to speaking. Research has shown that babies make vocalizations that are precursors for music (Welch, 2006). Children in kindergarten are able to sing a large number of songs with the performance level equivalent to adults. Some vocalizations border between singing and speech, which are largely explained by the shared neural pathways that underlay both singing and speech.

Singing has been associated with physiological effects, including changes in both the cardiovascular and pulmonary systems. Professional singers have been shown to have greater heart rate variability than amateurs, a sign of increased fitness (Grape, Sandgren, Hansson, Ericson, & Theorell 2003). Further, singing has been shown to have a positive effect on chronically ill patients with pulmonary functions (Bonilha, Onofre, Vieira, Prado, & Martinez 2009).

Stuttering is one condition that has shown improvements when singing has been introduced into the treatment regimen. In a 1976 study by Healey, Mallard, and Adams had participants reading or singing lyrics of well-known songs. It was shown that singing the lyrics resulted in greater reduction of stuttering than reading them. Andrews, Howie, Dozsa, and Guitar (1982) looked at 15 different activities designed to reduce stuttering, including singing. Their results showed that stuttering was reduced by 90% when participants sang instead of the other activities. Brain imaging studies (Stager, Jefferies, & Braun, 2003) have shown that the brain regions associated with singing were more active than brain regions associated with speech during reduction tasks.

Speech and vocal abnormalities are one of the most common afflictions associated with Parkinson's disease. It is estimated that over 80% of Parkinson's sufferers develop these types of abnormalities during the course of the disease (Ramig, Fox, & Sapir, 2008). These problems can result in a reduced quality of life and traditional treatment regimens have not always been effective.

Voice therapy programs including singing have showed promise. A program involving warm-ups and singing exercises showed gains in the intelligibility of speech and vocal intensity in Parkinson's patients (Haneishi, 2001). Choral singing has also been used as a treatment modality where patients with Parkinson's sang chants while accompanied by a piano (Di Benedetto et al., 2008) After 13 sessions the patients showed improvement in their phonation and reading.

Aphasia is a disorder that results in the lack of ability to either comprehend or produce language. It commonly results from strokes, but can also be caused by brain tumors, infections, injuries and dementia. There are two broad classifications of aphasia: fluent and nonfluent

(Beeson & Rapcsak, 2005). Fluent aphasia is marked by the ability to speak with normal grammar, syntax, rate, intonation and stress, but incorrect language content. The speech may be incoherent, they may string together normal words in a random fashion or use nonexistent words. Non-fluent aphasia is marked by the inability to produce speech, but their comprehension of speech is intact. Brain scans of patients with non-fluent aphasia show remarkable improvement in the regions associated with auditory and language functions after a singing therapy program.

Autism is another disorder where impairments in speech and verbal skills are prevalent. Some with autism are completely non-verbal. Their ability to hear is usually not affected (Heaton, 2003) and they have expressed interests in learning and making music (Trevorthen, Aitken, Paoudi, & Robarts, 1996).

A 1979 study by Miller & Toca used the Melodic Intonation Therapy (MIT) method with children afflicted by autism. Another study by Hoelzley (1993) used singing to encourage vocalization, which in turn led to the development of words. The results of these studies are encouraging, but further research is needed in order to determine if the results can be generalized to a larger population.

Singing and its effect on people with stress

The relationship between mind and body is one that researchers continue to explore. Health problems can be attributed to biological causes, including hereditary predisposition to an illness or disease or cause can be influenced by environmental factors, and often both come into play (Borysenko, 1984.) Emotional and psychological factors can also influence the development of diseases and illness, stress being one of the leading causes of a compromised immune system (Bartlett, Kaufman, & Smeltekop, 1993).

Secretory immunoglobulin A (SIgA) is an antibody that plays a critical role in mucosal immunity. It is the principle immunoglobulin found in saliva and all other body secretions. Low levels of SIgA have been associated with periods of stress, which in turn can compromise the immune system, leading to a greater predisposition to illness. It has been reported (Borysenko, 1984) that people with low levels of SIgA report more severe upper respiratory tract infections.

Music has been found to be a way to manage stress. Ashida (2000) found that the use of music therapy with a group of elderly patients with dementia helped to reduce the symptoms of depression as the therapy progressed. Kuhn (2002) sought to examine the relationship between the production of SIgA and exposure to music, specifically whether or not SIgA production would be higher in those that took an active role in making music instead of just listening to music.

Subjects were undergraduate students from Willamette University. There were 33 total subjects, 5 men and 28 women, who volunteered to be in the study. Six subjects had more than one year of musical training. Subjects were assigned to either the active group, passive group, or the control group, with each group running for 30 minutes. The active group included participation in various music making activities, the passive group had the subjects listening to live instrumental and vocal music pieces performed by university music students, and the control group subjects were allowed to move about the room, talk freely, or sit quietly. They were not permitted to engage in any activity related to music, including humming, singing, tapping rhythms, listening to, or discussing music.

Saliva samples were collected orally before and after each session. Findings show that the concentration of SIgA in the saliva of the active group showed the greatest increase in the tests performed after the groups' completion, with the passive group being next, and the control

group having the lowest concentration of SIgA. This supported the hypothesis of the author, that musical activity can increase immune system response and active participation provides a greater increase than passive listening.

Singing and its effect on a healthy population

With the positive effects singing has on the well-being of people who are marginalized, hospitalized, and who endure neurological conditions it is surprising that little research has been conducted on the effects singing has on the well-being of a healthy community sample. Unwin, Kenny, and Davis (2006) sought to fill this void in the research with their study of the effects singing has on mood. Three separate groups (in three different Australian locations) were formed. Out of each group, participants were randomly selected to either sing or listen to singing. Everyone completed the Profile of Mood States Questionnaire (P.O.M.S.) (McNair & Droppleman, 1981) three times – before, after, and one week after the session. This widely used method measures six identifiable mood or affective states: Tension-Anxiety; Depression-Dejection; Anger-Hostility; Vigour-Activity; Fatigue-Inertia; and Confusion-Bewilderment. It only takes 3-5 minutes to complete.

The singing program consisted of two vocalises and five songs. The songs were from different regions of the world (not in English) and were simple in structure, melody, tonality, and rhythm. The songs were relatively short and consisted of a range that was accessible to the untrained singer. Each song was taught in rote fashion while using an overhead projector to display the words and music. Participants learned the songs in about two to three attempts. Once learned, the songs were sung repeatedly (up to six times) with piano accompaniment.

All three questionnaires were completed by 81 out of the 107 participants. The results of this study support the researchers' hypothesis that singing can alter mood. The second

hypothesis that singing would have a significant different effect on mood compared to listening was not confirmed. This may have happened because the listeners (control) and singers (experimental) were in the same room and experienced the same teaching routine. They were asked to just not sing but to listen. Further, the positive ratings on the P.O.M.S. the week following the experiment could be solely based on the participants recalling the pleasurable singing/listening event. The researchers hope that this will be a starting point for further research.

Qualitative studies revealed that singing and participation in choral groups affords participants with a wide range of social, psychological and health benefits. Participants reported feeling less depressed, a heightened sense of self-worth, and an outlet to further develop and enhance social skills. Studies involving questionnaires have revealed that a majority of participants have responded in the affirmative to questions regarding the benefits of their participation on various choral groups and activities. Bailey and Davidson's (2003) study comparing active participation in music vs. passive listening show that the group singing scored higher on measures of mood and self-worth.

Experimental studies have measured physiological variables thought to have an impact on well-being. Kuhn (2002) measured the levels of antibodies in saliva before and after singing and reported increases after singing, suggesting increased immune system activity. Nursing home patients with anxiety and depression showed improvements in both of these conditions after participating in a four week program including singing.

The current body of research has limitations. Many of the studies do not include a sample size large enough to produce results that are generalizable. A universal lack of

understanding of the concept of well-being and the absence of a model to explain the connection between singing and health and the role gender plays point to the need for further research.

Clift and Hancox (2010) sought to address the current limitations in their study examining choral singers in England, Germany and Australia and the effects of singing on well-being and health. The cross-nationality of the study hoped to provide a baseline in which findings could be generalized. The study uses the World Health Organization's Quality of Life abbreviated instrument (WHOQOL-BREF) and that organization's definition for health to measure quality of life.

The study included 1124 choral singers from 21 choral societies in England, Germany and Australia. The questionnaire was made up of three parts. The 1st asked for personal and demographic information, the 2nd focused on the effects of choral singing on life, well-being and health, and the 3rd section contained the WHOQOL-BREF test. This test examines four areas of life pertaining to well-being: physical, psychological, social and environmental.

Results showed that the number of women participating outweighed the men. Many had previous experience, either singing or playing musical instruments. A majority felt satisfied with their health and described it as either good or excellent. An overwhelming percentage of the responses were in the affirmative to questions about singing and its relationship to well-being, including making participants feel happier afterwards, improving their health, reducing negative feelings, helping to deal with stress, acting as a way to relax and improving attitude.

Answers to the open ended questions revealed that many participants were experiencing life challenges that could impact their mental and/or physical well-being. These included mental health problems, family/relationship problems, physical and mobility issues and the loss of loved

ones. Participants all indicated that singing and participating in a choir helped them to cope with these stressors and provided them with a positive outlet to deal with them.

The researchers posited that many of the mechanisms at work can serve to counteract factors that would have a negative impact on mental and physical health. These include positive affect, focused attention, deep breathing and social outlets and regular commitments.

Participants reported seeing value in these mechanisms and felt they led to improved well-being.

The results mirror findings from previous research that reported chorus members' singing and participation in choral activities as being beneficial. It is interesting to note the sex differences noted in the findings. Women were more likely than men to report benefits from singing. These findings merit further study in the role gender plays in well-being and singing. One might speculate that men are less likely to share their emotions or may participate in choral ensembles for other reasons, including the opportunity to socialize.

This study contributes to the body of research that suggests that there are benefits, both psychological and physiological in participating in choral music ensembles and in the act of singing itself. This research supports the notion that governments should see arts endeavors such as these as a wise investment, as populations continue to age and costs associated with aging will place a greater strain on budgets.

Conclusion

This collection of literature consistently found that singing improved the well-being of the population groups examined. Bailey and Davidson (2005) found that homeless men and marginalized men and women had improved emotional health after singing in an ensemble together. Male prison inmates' well-beings were improved (Cohen 2009) and female inmates experienced improved relationships with their peers (Siber, 2005). Much research has been

conducted on the benefits of singing on the well-being of seniors. Seniors who sing together experience reduced isolation (Bungay & Skingley, 2008, 2010), improved self-confidence, and positive physical and emotional health (Lally, 2009). Wise, Hartmann, and Fisher (1992) reported that seniors who mastered an activity, such as singing, experienced a positive effect on their health as they aged.

Developing young music educators and music therapists' have benefited from an intergenerational choral performance. Bowers (1998) found that the students wanted to stay in contact with the senior participants and the senior participants found the choral experience to be a supportive social environment. These outcomes support Ryff's (1989) multiple dimensions of well-being: positive relations with others, self-expectance, autonomy, environmental mastery, purpose in life, and personal growth. Singing has been shown to benefit hospitalized children. Longhi and Pickett (2008) found that live soothing music promoted oxygen saturation in hospitalized children, which promoted healing. People with neurological disorders have also found improvements in their well-being through singing and singing treatments. Wan, et. al., (2010) found through a comprehensive literature review that singing decreases the symptoms of people who have aphasia, Parkinson's disease, and stuttering. In Kuhn's (2002) research it was reported that singing increased immune system response. This was measured by taking saliva samples and examining the levels of (SIgA) which is an antibody that has an effect on mucosal immunity. And lastly, Unwin, Kenny, and Davis (2006) found that singing has a positive effect on mood. Interestingly, it was found that women are more likely to report benefits of singing than men.

This research shows that singing is a valuable physical and psychologically stimulating activity. The findings are promising for health care providers, music educators, and arts

advocates. Singing has the power to heal, nurture, and help people overcome challenging life situations. Though more research is needed to generalize to the entire population, the findings presented are strong and answer many questions that those who sing regularly have often suspected were true.

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