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‘Sound of Well-being’ revisited – Choir singing and well-being among Norwegian municipal employees

ABSTRACT

A recent cross-sectional study investigating an organizational choir-singing intervention called ‘Sound of Well-being’ (SOW) indicated health and organizational benefits, and a gender-specific pattern of participation and outcomes. In this study we investigate participation and effects in a short version of SOW. A total of

KEYWORDS

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1100 employees of a Norwegian municipality were invited to participate in SOW. At baseline, 472 (42.9 per cent) employees filled in a questionnaire concerning demographics, personality, health, engagement, commitment and psychosocial work environment. A total of 312 (66.1 per cent) of these completed the same survey one to three weeks after SOW was finished. We found that female gender and extroversion were linked to participation in SOW. Women reported significant changes in engagement, self-perceived health and control, while men reported changes in job demands. Overall, participants reported an increase, while non-participants reported decrease on aforementioned variables. In terms of participation and effects of SOW, findings differed between professions, personality types and gender. In order to provide desirable alternatives to a wider group of employees, future interventions should include a variety of both receptive and creative activities.

INTRODUCTION

There is increasing international interest in organizational interventions aiming to improve the psychosocial work environment as well as the well-being and health of employees (Nielsen et al. 2010). However, knowledge about participation in these interventions and their effectiveness is still lacking (Nielsen et al. 2007, 2010; Nielsen and Randall 2012).

Nevertheless, there has been some research showing effects of organizational interventions based on the traditional division of *primary*, *secondary* and *tertiary* interventions (Lamontagne et al. 2005; Richardson and Rothstein 2008), i.e. showing effects of reorganization of the workplace (Egan et al. 2007) and programmes for physical activities during work hours (Proper et al. 2003).

E. K. Kelloway et al. (2008) and T. Theorell (2012) argue that the focus within the research on organizational interventions has been too narrow, and propose the concept of countervailing interventions. This refers to interventions enhancing the positive experiences of work as opposed to traditional efforts that aim at decreasing the negative aspects, in order to counteract the negative effects of stressors in the workplace.

In western countries, it is quite common to organize activities like dinners and lunches outside work hours, social activities, financed vacations, competitions and informal physical activities to promote a positive work environment as well as inspire and motivate employees. Alanda (2001) noted that roughly 90 per cent of organizations with more than 50 employees implement some sort of activity or programme to promote health and/or well-being. These types of measures are seldom regarded as interventions, however, even though they often are based on the underlying assumption that the activity or measure will have a positive effect on the work environment.

Although the evidence is limited, a number of studies have shown that participation in cultural activities may indeed promote well-being and positive health outcomes (Bygren et al. 2009a, 2009b, 1996). In a large prospective study in Sweden, Theorell et al. (2013) found beneficial scores on emotional exhaustion among employees who had cultural activities organized at work, compared to controls. The majority of studies have focused on employees as recipients in cultural activities (Theorell 2009), yet there are some studies that show that active participation in choir singing has a positive impact on well-being and health (Clift and Hancox 2001; Grape et al. 2002). G. Kreutz et al. (2004) reported that singing in an amateur choir led to increased positive

affect as well as increased levels of the immunity marker S-Ig A in the participants' saliva. S-Ig A is a protein involved in defense against respiratory infections, and therefore these findings suggest that singing may strengthen the immune system as well as induce positive emotions. Similar results have been found in other studies (Kuhn 2002; Theorell 2009). In a randomized controlled trial (Grape et al. 2009a, 2009), subjects who started singing in a choir once a week had a decrease/increase in plasma fibrinogen (which is favourable for the immune system), than controls. During the first half-year the choir singers also had improved activity in the regenerative hormone system (protecting against adverse effects of stress) – which was not seen in the control group.

A recent population-based study (Cuypers et al. 2012) has suggested that cultural participation may have a gender-dependent association with perceived good health. Especially among men, attending receptive cultural activities, rather than creative activities such as singing, was more associated with healthy outcome. And while good health was associated with participation in choirs among women, the same pattern was not found among men. In a recent review on the research literature on singing, well-being and health, S. M. Clift (2012) argues that there is a crucial need for further research within this field before one can make strong evidence-based claims regarding the value of singing for improved health.

We recently reported results from a cross-sectional study of 1431 Norwegian hospital employees who participated in a retrospective questionnaire survey of a choir-singing intervention called 'Sound of Well-being (SOW)' (Milch et al. 2013; Vaag et al. 2013). In SOW, three professional pop and rock musicians helped carry out an organizational intervention. Employees were recruited to choirs based on departments, and they practiced weekly outside work-hours, preparing for a large-scale concert at the end of the project period. The aim of the project was to promote positive work environment and employee well-being. The intervention showed promising positive results, but we stressed the need to further investigate SOW using a pretest-posttest design. In the current study in a Norwegian municipality we use this type of design to investigate some of the hypotheses drawn from our initial study, both in terms of participation, outcomes and effects of SOW.

We ask two research questions in this study:

1. Are there systematic differences between the groups of participants and non-participants with regard to gender, personality and form of employment?
2. Are there differences in reported change between these two groups with regard to demand, control, support, engagement, organizational commitment and global health during the intervention period?

Based on the findings in the initial evaluation of SOW, we had the following hypotheses in the current study: we expected a lower degree of participation among men and part-time employees, as well as a higher degree of extroversion among participants compared to non-participants. Overall, we expected to find improvement in general health, engagement, commitment and psychosocial work environment in the intervention group compared to non-participants. To account for a possible gender-difference in response to singing, we did also stratify our results by gender.

METHODS

Setting, participants and design

All 1100 employees of the Namsos municipality (Norway) service functions were invited to participate in a choir-singing intervention (SOW). Information and invitations were sent out by e-mail to each individual, and to the heads of all departments, a few weeks prior to the project. After an intensive marketing period, the project started on 1 February 2012. Except for the pre-post design and the shorter duration of this intervention (three months vs nine months) as compared to the first SOW study (Vaag et al. 2013), the intervention programmes were identical in the two studies. Three professional artists instructed, trained and advised the choirs as well as accompanied them with guitar, piano and lead vocals. The repertoire was selected by the professional musicians and consisted of five well-known pop and rock songs. Furthermore, a conductor, choreographer and various suppliers of sound, light and film were made accessible.

Around 370 (33.6 per cent of the eligible workers) participated in SOW. The participants were divided into eight choirs, bringing employees from different functions of the municipality together (schools, fire department, health care workers, childcare services, administration, etc.). The project lasted three months and the exercises took place at the community centre. The choirs completed a total of ten rehearsals, as well as a final rehearsal prior to the grand finale, at one of the local concert arenas in Namsos.

Data collection, sample, variables and indices

This is a non-randomized, pretest-posttest design. The study received ethical approval from the Norwegian Social Science Data Services. A total of 472 (42.9 per cent) employees, both participants and non-participants, answered our initial questionnaire distributed on the first day of recruitment and rehearsals.

One week after the project was finished, a total of 312 (66.1 per cent) of the initial respondents filled in the second questionnaire. Two reminders were sent during the first wave of data collection and three reminders were sent during the second wave of collection. A total of 218 of the respondents had participated in the intervention, while 94 had not. The group of 94 non-participants was used as controls in our study.

The questionnaire used in the present study was the same as in our previous investigation of SOW (Vaag et al. 2013). It was based on well-established and previously validated instruments designed for the evaluation of occupational health and well-being. Work engagement was measured using the nine-item version (measured on a six-point Likert scale (0=never to 6=every day)) of 'The Utrecht Work Engagement Scale' (UWES) (Schaufeli et al. 2002). The scale is designed to measure engagement in work with items such as 'When I get up in the morning, I feel like going to work' and 'I am proud of the work that I do'. Indices for both the pre ($\alpha=0.93$) and post ($\alpha=0.94$) measure of this concept were created. Organizational commitment was measured using the 'Organizational Commitment Questionnaire' developed by R. T. Mowday et al. (1979). This measure is based on eleven questions, measured on a five-point Likert scale (1=strongly disagree to 5=strongly agree). Examples of items are 'I'm proud to tell others that I am part of this organization' and 'I really care about the fate of this organization'.

Indices were created for both the pre ($\alpha=0.77$) and post ($\alpha=0.79$) measure. To measure the psychosocial job characteristics, we chose to use ten items, measured on a five-point Likert scale (1=very rare to 5=very often), from the Job Content Questionnaire (JCQ), thus making formative indices of Demand, Control and Support according to the DCS-model (Karasek and Theorell 1990). 'How often does your work allow you to do decisions on your own?' and 'How often do you receive support and help from your colleagues?' are examples of items from this scale. A shortened version of the Eysenck Personality Questionnaire (EPQ-12) (Eysenck and Tams 1990) was used to assess degree of extroversion ($\alpha=0.67$) and neuroticism ($\alpha=0.71$). The questionnaire consists of twelve items, where respondents are asked to answer yes or no to questions regarding themselves. Examples of questions are 'Do you enjoy meeting new people?' and 'Are your feelings easily hurt?'. In addition, a Likert scale (1=bad to 4=very good) self-perceived global health variable ('How is your health now?') that has been used in many population studies (<http://www.ntnu.edu/hunt>) was included.

Missing data

It should be noted that there were some missing values in our pretest data. A descriptive analysis of these values, as well as R. Little's MCAR test (1988), was conducted on our pretest measures. On these measures, there were between 0.3 and 3.5 per cent missing. The expectation-maximization technique was used as a method to impute missing values on these variables. Little's MCAR test showed that there was uncertainty as to whether the missing values on commitment were missing at random. We decided to assign the same value reported on the posttest-measure of commitment to these missing values.

Statistics

SPSS version 19.0 (IBM Corporation 2010) was used for statistical analysis. In order to explore differences between participants and non-participants in SOW at the beginning of the project, we used χ^2 tests on demographic variables assessed in our pretest. Independent samples *t*-tests were used for the exploration of differences in engagement, demand, control, support, organizational commitment, self-perceived health, neuroticism and extroversion.

An additional explorative approach for detecting possible predictors of non-participation was conducted using a backward logistic regression. The entire model consisted of fourteen variables. Pretest responses on gender, age, form of employment, seniority, interest in choir singing, extroversion, neuroticism, demand, control, support, organizational commitment, self-perceived health and work engagement were all included in the model. Age was recoded into three categories, with the age range of 36 to 50 as a reference group. In the other categorical variables, we used the category with the largest frequency as the reference group in analysis. The assumption of linearity of the logit was tested using a forced entry logistic regression examining whether the interaction term between the predictor and its log transformation was significant. None of the interactions were significant. We also tested for multi-collinearity using linear regression and collinearity diagnostics in SPSS. The included variables have tolerance levels between 0.58 and 0.95 and variance of inflation factor (VIF) between 1.0 and 1.8.

Gain score variables were computed for pre and post measures of engagement, commitment, demand, control, support and self-perceived health. Independent samples *t*-tests were conducted on these gain scores, using participation in the intervention as the independent variable.

Specific sub-group analyses on the possible effects of gender were conducted and possible indicators of participation and change through gain scores were examined.

RESULTS

Table 1 shows demographic characteristics, frequency distributions and the mean differences between participants and non-participants on variables measured at the beginning of the intervention. Significant differences occurred between the two study groups regarding distribution of gender, extroversion and social support.

Characteristics	Total sample (<i>n</i> =311) 100%	Participants (<i>n</i> =217) 69.8%	Non-participants (<i>n</i> =94) 30.2%	<i>P</i> ^[3]	ES ^[4]
Gender				0.001 ^[2]	0.19
Men	73 (24.2%)	39 (18.8%)	34 (36.2%)		
Women	229 (75.8%)	169 (81.3%)	60 (63.8%)		
Age				0.453	
Older than 61	19 (6.1%)	17 (7.8%)	2 (2.1%)		
56–60	38 (12.2%)	25 (11.5%)	13 (13.8%)		
51–55	48 (15.4%)	35 (16.1%)	13 (13.8%)		
46–50	50 (16.1%)	32 (14.7%)	18 (19.1%)		
41–45	57 (18.3%)	42 (19.4%)	15 (16.0%)		
36–40	56 (18.0%)	37 (17.1%)	19 (20.2%)		
31–35	20 (6.4%)	15 (6.9%)	5 (5.3%)		
26–30	15 (4.8%)	9 (4.1%)	6 (6.4%)		
Younger than 25	8 (2.6%)	5 (2.3%)	2 (3.2%)		
Seniority				0.361	
0–1 year	40 (12.9%)	28 (12.9%)	12 (12.8%)		
1–5 years	92 (29.6%)	61 (28.1%)	31 (31.0%)		
5–10 years	58 (18.6%)	37 (17.1%)	21 (22.3%)		
Over 10 years	121 (38.9%)	91 (41.9%)	30 (31.9%)		
Employment				0.593	
Permanent, full-time	195 (62.7%)	131 (60.4%)	64 (68.1%)		
Permanent, part-time	89 (28.6%)	65 (30.0%)	24 (25.5%)		
Temporary, full-time	14 (4.5%)	11 (5.1%)	3 (3.2%)		
Temporary, part-time	13 (4.2%)	10 (4.6%)	3 (3.2%)		
Personality					
Extroversion	4.50 (1.50)	4.64 (1.39)	4.17 (1.70)	0.021 ^[1]	0.38
Neuroticism	1.57 (1.64)	1.62 (1.63)	1.47 (1.64)	0.483	

Psychosocial work environment					
Demand	3.76 (0.72)	3.80 (0.72)	3.67 (0.73)	0.138	
Control	3.87 (.59)	3.87 (0.59)	3.88 (0.61)	0.898	
Support	3.76 (.79)	3.83 (0.77)	3.62 (0.86)	0.032 ^[1]	0.24
Engagement	5.72 (1.03)	5.72 (1.02)	5.72 (1.06)	0.972	
Commitment	3.45 (.53)	3.48 (0.53)	3.38 (0.52)	0.142	
Perc. Health	3.13 (.67)	3.14 (0.66)	3.12 (0.69)	0.797	

Note: ES=effect size.

^[1] $p < 0.05$

^[2] $p < 0.01$

^[3] Pearson χ^2 on gender, age, seniority and employment. Independent samples t -tests on personality, psychosocial work environment measures, engagement, commitment and self-perceived health.

^[4] Cramer's V on Age, Cohen's d on Extroversion and Support

Table 1: Frequency distribution of demographic variables in the evaluation of SOW.

The explorative backward stepwise logistic regression included gender, extroversion, control, support and interest in choir singing in the final model (χ^2 (5, $N=303$)=70.0, $p < 0.001$) (Table 2). To examine possible gender differences, we also included an analysis stratified by gender. The logistic regression model for women showed that interest in choir singing and extroversion remained as the only two variables in the final model (χ^2 (3, $N=230$)=73.5, $p < 0.001$). Conversely, better self-perceived health, commitment, control and higher age remained among men (χ^2 (4, $N=73$)=72.6, $p < 0.001$).

Table 3 reflects an improvement in self-perceived health in participants and a decrease in non-participants during the project period. Furthermore,

Variables	Total sample ($n=303$)			Women ($n=230$)			Men ($n=73$)		
	OR	P	95% CI	OR	P	95% CI	OR	P	95% CI
Gender (M)	1.89	0.036 ^[1]	1.04–3.42						
Age 50+							0.32	0.055	0.10–1.03
No interest	3.08	0.000 ^[2]	1.72–5.51	3.68	0.000 ^[2]	1.80–7.52			
Health							0.25	0.008 ^[2]	0.09–0.70
Extroversion	0.81	0.016 ^[1]	0.67–0.96	0.78	0.018 ^[1]	0.63–0.96			
Control	1.55	0.100	0.92–2.60				2.46	0.087	0.88–6.87
Support	0.69	0.059	0.47–1.01						
Commitment							0.22	0.010 ^[1]	0.07–0.70

Note: OR=odds ratio, CI=confidence interval.

^[1] $p < 0.05$

^[2] $p < 0.01$

Table 2: Analysis of possible predictors contributing significantly to non-participation in Sound of Well-being (backward logistic regression) for the entire sample, divided by gender.

Variables	Participants (<i>n</i> =217) ^[3]		Non-participants (<i>n</i> =94) ^[4]		<i>P</i> ^[5]	ES ^[6]
	Pretest	Posttest	Pretest	Posttest		
Engagement	5.72 (1.02)	5.74 (1.02)	5.72 (1.06)	5.60 (1.14)	0.169	
Men	5.91 (0.86)	5.64 (1.18)	5.66 (1.12)	5.64 (1.07)	0.168	
Women	5.68 (1.07)	5.76 (0.99)	5.76 (1.03)	5.58 (1.18)	0.046 ^[1]	-0.27
Commitment	3.48 (0.53)	3.51 (0.52)	3.38 (0.52)	3.33 (0.50)	0.115	
Men	3.66 (0.47)	3.57 (0.54)	3.37 (0.61)	3.31 (0.53)	0.737	
Women	3.43 (0.55)	3.50 (0.51)	3.39 (0.47)	3.33 (0.48)	0.057	
Demand	3.80 (0.72)	3.76 (0.69)	3.67 (0.73)	3.59 (0.79)	0.518	
Men	3.66 (0.73)	3.69 (0.74)	3.70 (0.67)	3.48 (0.69)	0.023 ^[1]	0.15
Women	3.84 (0.72)	3.77 (0.68)	3.80 (0.62)	3.64 (0.84)	0.487	
Control	3.87 (0.59)	3.88 (0.59)	3.88 (0.61)	3.79 (0.61)	0.074	
Men	3.97 (0.65)	3.86 (0.72)	4.01 (0.56)	3.48 (0.69)	0.635	
Women	3.85 (0.57)	3.89 (0.56)	3.80 (0.62)	3.69 (0.64)	0.037 ^[1]	-0.28
Support	3.83 (0.77)	3.76 (0.84)	3.62 (0.86)	3.55 (0.90)	0.994	
Men	3.70 (0.69)	3.62 (0.78)	3.51 (0.84)	3.47 (0.90)	0.820	
Women	3.85 (0.79)	3.79 (0.86)	3.80 (0.62)	3.60 (0.90)	0.894	
Health	3.14 (0.66)	3.21 (0.60)	3.12 (0.69)	3.02 (0.72)	0.022 ^[1]	-0.30
Men	3.28 (0.56)	3.31 (0.61)	2.94 (0.65)	3.00 (0.74)	0.819	
Women	3.10 (0.68)	3.19 (0.60)	3.22 (0.69)	3.03 (0.71)	0.002 ^[2]	-0.42

Note: ES=effect size.

^[1] *p*<0.05

^[2] *p*<0.01

^[3] Men (*n*=39) / Women (*n*=169)

^[4] Men (*n*=34) / Women (*n*=60)

^[5] Analysis is based on comparison of gain scores (posttest-pretest).

^[6] Cohen's *d*.

Table 3: Analyses of differences between participants and non-participants based on gain scores.

in the same period women reported significant changes in engagement, self-perceived health and control, while men reported changes in perceived job demands. We again note the trend of seeing an increase in these variables among participants while we see a decrease among non-participants.

DISCUSSION

In this non-randomized pretest-posttest study of a choir-singing intervention (SOW), we confirmed a higher degree of participation among women than men and among extroverted employees. We did, however, not find differences between full-time and part-time workers. The gender-specific patterns of change and outcomes after SOW was consistent with our hypothesis and previous investigation of SOW (Vaag et al. 2013). Female participants reported higher degrees of job control, self-perceived health and engagement compared to non-participants. However, while we observed an increase in these measures among participants, we observed a decrease in the measures among non-participants during the intervention period. We found no

evidence of changes in social support or organizational commitment among women. Among men we did see a significant change in job demands, where male non-participants reported a decrease in demands.

Participation in SOW

The notion that choir singers may be more extroverted than participants in other types of activities is supported by research on the personalities of choir members (MacLellan 2011). The tendency of men being less likely to be involved in choir singing is regarded as a well-known pattern (Clift and Hancox 2010). Although the strength of these relationships was moderate, the findings indicate that this kind of intervention does not appeal equally to all groups of employees.

In keeping with our findings, some earlier studies of choir-singing interventions have indicated gender differences in regards to effects and outcomes (Clift et al. 2010; Clift and Hancox 2001; Clift et al. 2010). Further, our findings suggest that differences also exist between genders in the motivations for participating in such forms of interventions. While a general interest in activities like choir singing is a significant factor among women, the same is not seen among male participants.

Offering other forms of creative activities such as painting, creative writing, dancing, sound or lighting production, stage construction or producing music videos, could potentially attract other groups of employees. Also, receptive activities such as attending rehearsals or concerts as spectators could entice additional employees that chose not to participate in SOW.

Changes during SOW

Our results support that participation in SOW is beneficial, as indicated in our previous study (Vaag et al. 2013). But there are concerns both with regard to gender-specific differences and a possible negative effect of SOW on non-participants. In a recent review, Clift (2012) concludes that there appears to be a discrepancy between the findings from the small-scale qualitative studies and the larger-scale descriptive studies, and that the support from the 'experimental' studies of choir singing and health is moderate (Clift et al. 2010, 2008; Clift 2012). In our first investigation of SOW, our measures of change were based on retrospective reporting of changes in engagement, demand-control-support and self-perceived health in the time period of the intervention. In this study we were able to apply a prospective design with assessment of both groups both prior to the intervention and after. Our current results show that while the participants report increases, non-participants show a negative tendency. A possible explanation may be that some of the non-participants view the intervention as a disturbing element, or, as described by Theorell et al. (2009), non-participants might display a 'jealousy effect'. As a solution to minimize this effect, they suggest that cultural interventions should be broadly implemented to obtain a collective 'climate change'. The disparities could promote negative effects that may override any collective benefits that may have otherwise occurred. Although measures of change reach statistical significance, the effect sizes are very modest and need to be interpreted with caution. It is still too early to conclude to what extent these changes reflect improved well-being and health in each individual.

As previously mentioned, our results show that in addition to broadly implementing cultural activities, one should also expand the range of possible

activities to participate in. This is supported from our findings on differences between participants and non-participants. This is also supported by our gender-specific pattern of change, that seem to support the general notion of sex differences in the experience of choral singing, where women is seen to participate to a higher degree than men (Clift et al. 2010; Clift and Hancox 2001; Clift et al. 2010), and in the participation in creative vs receptive cultural activities (Cuypers et al. 2012). It is though important not to conclude at this preliminary point. There is a crucial need for further studies on the effects of choir singing.

Strengths and limitations

The strength of this study, compared to our previous investigation of SOW was that it was based on both pretest and posttest measures. This provided the opportunity to explore reasons for participation and obtain hypotheses for possible effects of the intervention. It should be noted that the questionnaire was based on established organizational psychological concepts in both studies.

The main limitation of this study is that we were not able to obtain pretest measures from our respondents before the intervention was announced. The fact that the intervention had already been introduced by the Municipality administration and that the data collection started after the initial meetings may have resulted in an expectation effect that is likely to have produced bias in our pretest measures. In other words, it seems reasonable to say that our pretest measures are not a baseline measure of the organization, but rather a measure of an organization in the initial phase of change. This expectation effect may have influenced the responses of both participants and non-participants. Another important limitation is the lack of randomization, and outcome measures should therefore be interpreted with caution. Nevertheless, the lack of randomization gave us the opportunity to look at factors that may influence people's decision to join the intervention.

Although this is a form of replication of our first study, it is important to note that the time-length of SOW were significantly reduced in this round. From nine months to three months.

CONCLUSIONS AND SUGGESTIONS FOR FURTHER STUDIES

The most important message from this study is that there seems to be gender differences in both participation and effects of SOW. With the ultimate goal of including a wider range of employees as well as gaining a more collective positive effect on the organization, SOW is in need of some refinement. It may be reasonable to include activities other than singing in SOW, i.e. helping in creating the scenography at the final concert and promotional work.

In future studies, a more sophisticated design, including a baseline assessment well ahead of project start and a series of follow-up surveys, is necessary to establish more firm evidence regarding immediate and long-term effects of workplace interventions such as SOW.

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