

Effects of Group Singing on Psychological States and Cortisol

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ABSTRACT

Background

Group singing has several psychological, physical, and social components that can interact and contribute to feelings of well-being. Due to the relative infancy of this field of research, understanding on what these beneficial and positive effects of group singing are and how they interact is still limited. In order to investigate how group singing may benefit our well-being and health, previous research has looked at effects of singing on psychological states and cortisol, a hormone related to well-being (Beck et al., 2000, Kreutz et al., 2004, Ryff et al., 2004). One major limitation of previous research to this date is a lack of experimental designs, participant randomization and an active control. However, without such research we are, in fact, unable to determine the main effects of group singing on our well-being and health.

Aims

This study aimed overcome the limitations of previous research and experimentally assess effects of group singing on cortisol and psychological variables. In this way, we hoped to better understand short-term effects of group singing on psychological states and cortisol of a group of people that had never sang together before. At the same time, we hoped it would allow us to start answering the question of whether the effects reported in the literature are unique to group singing or if they can be equally brought into place by other, non-musical group activities. More than looking for answers, we hoped to explore the feasibility of experimental methodology in this field.

Method

This was an experimental study employing a multivariate mixed measures design. The repeated measures independent variables were 1) Activity, with 2 levels – non-musical group activity, and group singing; and 2) Time, with two levels - before and after the activity. The between-participants experimental variable was Sex, with two levels - Male, Female. The dependent variables were positive and negative affect scores, salivary cortisol levels, social connection and flow ratings. This was a questionnaire and salivary concentration measures study. Eighteen participants (9 females; mean age= 28.17 years, *SD* = 4.70, range = 23-41 years) completed the two conditions in one of two orders.

Those randomly allocated to order A (n=10) took part in the group singing on day one, and non-musical activity on day two; those randomly allocated to order B (n=8) took part on the non-musical activity on day one and group singing on day two.

Results

Negative affect was rated higher before each activity than after and this difference was significant. Ratings of negative affect were also higher in the non-musical activity but this was not significantly different from the ratings in the group singing activity. Negative affect was rated higher on day one than day two and this difference was significant. Finally, female and male participants rated negative affect differently before and after each activity, with female participants having significantly higher ratings of negative affect before each activity and lower ratings after each activity, compared to male participants.

Ratings of positive affect were higher before the non-musical activity and after group singing but these differences were only marginally significant. Positive affect was significantly higher after each activity, and this was similar for both female and male participants and both orders of participation.

Salivary cortisol levels decreased significantly on both activities and this was similar for both female and male participants. Female and male participants had similar levels of salivary cortisol after each activity but male participants had significantly higher salivary cortisol levels before each activity. Finally, levels of salivary cortisol were the same before both activities but were lower after the non-musical activity. However, this difference was not significant.

Feelings of connection with those around were higher in the group singing activity than the non-musical activity but this difference was not significant. These feelings were also generally the same amongst female and male participants. Participants who took part in the group singing first had higher ratings of connection on both the group singing and non-musical activities, but the differences with the participants in the inverse order were not significant.

Finally, ratings of flow were virtually the same on the group singing and the non-musical activity. Ratings of flow were higher amongst female participants, compared to those of male participants, on both activities, but these differences were not significant.

Conclusions

As in previous research, we found that negative affect was lower, positive affect was higher (Kreutz et al., 2004) and salivary cortisol levels were also lower (Beck et al., 2000), after a group singing session. As suggested by the available literature, ratings of states of flow and feelings of social connection were also high after group singing. Also as the literature on cortisol suggests (Kirschbaum et al., 1992; Kudielka et al., 2009), female and male participants had different levels of salivary cortisol. Gender differences were also found on ratings of flow and negative affect, and these are consistent with the available exploratory literature (Clift and Hancox, 2001, 2010).

Both activities had similar effects, even though there seems to have been a tendency (though not statistically significant) for group singing to have stronger positive effects. We are able to conclude that group singing does bring about positive effects on well-being outcomes on a very short period of time, but any unique qualities of group singing are not highlighted by our findings.

This was the first experimental study on the particular topic of group singing and well-being, and it has provided empirical evidence that is consistent with the findings in the exploratory literature. More than providing experimental evidence, this study demonstrates the possibility of conducting randomized, properly controlled studies in this field, with non-singers and in a naturalistic setting. We hope to share more details on the developed design, including any encountered limitations, and that our colleagues wishing to further explore questions in the field find this useful.

Keywords

Singing Cortisol Flow PANAS

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