PERCEIVED HOLISTIC HEALTH EFFECTS OF THREE LEVELS OF MUSIC PARTICIPATION

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ABSTRACT

Interpretive phenomenological analysis of in-depth semi-structured interviews with homeless and disadvantaged singers indicated that participation in group singing generated positive emotional, social, cognitive and physical effects. Additionally, participants suggested that these effects could not be realized through listening to music. Recent physiological studies have found positive effects of group singing and group listening. However, the artificiality of the listening conditions and the absence of investigation of the effects of solitary listening prompted further investigation of differing levels of participation in music. A pilot survey was developed to probe amateur choristers' perceptions of 3 levels of music participation (group singing, listening to music alone, and listening to music with others) on 5 dimensions of holistic health.The participants were 124 singers (96 females) from 3 distinct choirs (church, community, work place). The ages of the participants ranged from 24 to 82 years (m = 52.16). Participants rated items using a 5-point Likert-type scale. Of the 66 randomized items, 22 items similarly examined each of the 3 participation levels. Although the ratings were generally high, 16 items received the highest average ratings in the 'group singing'category. 'Listening to music alone' received the highest average ratings for 6 items. For all but 2 items the 'listening with others' category received the lowest average ratings. When ratings for all items for each participation category were averaged, group singing received the highest rating and listening to music with others received the lowest rating. Consistent with outcomes of the physiological studies noted above, results of the survey suggest that participation in group singing may be particularly beneficial in stimulating positive arousal at many levels of behaviour. Also, it appears that the survey participants perceived that segregated listening had more stress reducing characteristics than social listening. Further examination of different types of music participation may increase understanding of how music may be utilized in therapeutic, industrial and educational contexts to effectively stimulate arousal and arrest stress.

1. INTRODUCTION

In previous research with members of 2 choirs for homeless and disadvantaged singers with little or no music training (Bailey & Davidson, 2002; Bailey, 2002), interpretative phenomenological analysis (Smith, 1996) of in-depth semi-structured interviews indicated that group singing positively affected emotional, social, cognitive and physical processes. Additionally, some of the choristers comments suggested that the positive effects attributed to group singing did not occur while listening to music.

Several recent physiological studies have utilized measurements of salivary immunoglobulin A (sIgA) and cortisol to investigate the effects of active and passive participation in music. IgA is an endocrine defense against bacterial infection in the upper respiratory tract (Tomasi, 1972). Increases in levels of sIgA have been associated with pleasurable social (Miletic et al., 1996) and emotional events (Dillon et al., 1985). Cortisol is a measure of stress (Kirschbaum & Hellhammer, 1994), and increases in cortisol levels have been associated with unpleasant and stressful events (Benjamins et al., 1992) and activities (Buchanan et al., 1999).

In an investigation with a professional chorale, Beck et al. (1999) found a significant increase in sIgA between pre and post group singing during 2 practices and a performance. Additionally, cortisol was found to have significantly decreased after practices but significantly increased following the performance. Kreutz et al. (2003) measured levels of sIgA and cortisol in pre and post group singing and group listening conditions with members of an amateur choir. These researchers found that there was a significant increase in sIgA between the pre and post group singing condition but not the pre and post group listening condition. However, cortisol decreased significantly between pre and post group listening but not between pre and post group singing. In another contemporary physiological study with 33 undergraduates, Kuhn (2002) found that sIgA levels were significantly higher following an active group music activity which involved singing and playing percussion instruments than listening to a live musical performance in a group environment.

Whereas the results of the above studies suggest positive effects for both group singing and group listening, there is still considerable ambiguity surrounding differences and similarities in the effects of active and passive participation in music. One drawback of the Kreutz et al. (2003) and Kuhn (2002) studies is the artificiality of the listening condition. An additional issue, which was beyond the scope of the above studies, is the differences between social and segregated listening. For example, there is some evidence from research with adolescents to suggest that the majority of the time spent listening to music occurs in isolation (Larsen & Kubey, 1983). Although there appears to be no comparable research to indicate that this is also the case with adults, personal experience and knowledge of others' listening habits would suggest that much adult listening also occurs in seclusion. Bull (2000) has proposed that the personal stereo is often used to avoid unwanted affiliation and to escape temporarily from the realities and responsibilities of everyday life. It is clear that social listening may not create the proper conditions to achieve this effect. The amount of time spent in segregated listening may indicate that this is a more rewarding activity than social listening.

However Csikszentmihalyi (1997) has proposed that social isolation encourages distracting and distorted thoughts, and contributes to the development of emotional disorders. His research indicates that people experience more negative feelings when they are alone, and that negative feelings dissipate in the

ISBN 3-931852-67-9
ISSN 1617-6847

company of others. Furthermore, Csikzentmihalyi reports that both physical and mental health are improved through filling time with meaningful activities which require cognitive engagement. In view of these findings, individuals may receive more benefits from active and social forms of music involvement.

It was decided that exploration of perceptions of naturalistic encounters with music might help to further clarify the effects of active and passive participation in music. To this end a pilot survey was designed to investigate individual perceptions regarding holistic health benefits of 3 levels of music participation: (1)group singing, (2) listening to music alone, and (3) listening to music with others (friends, family, acquaintances).

2. METHOD

2.1. Participants

Choristers from 3 choirs participated in the survey: Choir 1 (n = 117) was a Christmas choir which is formed each year to present a concert and accompany services at a local Catholic church. The choir is comprised of church members and individuals from the general public; Choir 2 (n = 40)) was a recently formed community choir which performs several concerts a year at local venues; and Choir 3 (n = 55) was a workplace choir at the Department of Veteran's Affairs which performs mainly at seniors' residences. We specifically chose amateur choirs in which the majority of the members had low levels of music training as we were trying to target perceptions of the general population rather than those of proficient musicians. Demographics of the choirs and the participants are presented in Table 1. Analysis of variance (ANOVA) indicated that there were no significant differences between choir and (1) age, (2) years of voice lessons, (3) years of instrumental lessons, and (4) years of choral participation.

2.2. Procedure

Members of the 3 choirs were asked to participate in a survey investigating attitudes related to music. In order to camouflage the purpose of the study the items relating to the 3 levels of participation were interspersed among other items related to choir practices, performances, voice quality and conducting techniques. Using a random number table the items were grouped into two survey orders (order 1 & order 2). Of the 100 items included in the pilot survey, 69 items investigated holistic health effects of music in the 3 participation categories. Therefore, each of the 23 items were worded specifically to target each category. For example: (1) Singing in a choir usually improves my mood, (2) Listening to music alone usually improves my mood; and (3) Listening to music with others usually improves my mood. The 23 items were classified under 5 dimensions of holistic health: emotional (8 items), physical (5 items), cognitive (4 items), social (1 item) and life-satisfaction (5 items).

Participants were instructed to rate items using a 5-point rating scale. In order 1 the rating scale progressed from 1 to 5 with strongly agree = 1, agree = 2, uncertain = 3, disagree = 4 and strongly disagree = 5. In order 2 the numerical values of the rating scale were reversed.

With consideration to the length of the survey we were concerned that the participants would become tired or bored thus causing diminished concentration to the items. Therefore, 1 item in each category (Singing in a choir does not improve life satisfaction; Listening to music alone does not improve life satisfaction; Listening to music with others does not improve life satisfaction) was included twice. The repeated item in each category was a test of attention, and once it was established that this item received a similar rating in each of the 2 occurrences, the 2 scores were averaged for reporting purposes. Accordingly, there were 22 items for each of the 3 levels of participation. Of these 22 items, 11 were phrased in the positive and 11 were phrased in the negative.

	Christmas Choir	Community Choir	Work Place Choir
participation rate (%)	71.8	45	40
gender (%females)	77.4%	83.3%	77.3%
average age (years)	53.1	45.3	42.8
sing in 1 choir (%)	73.2	55.6	72.7
no voice lessons (%)	81.6	61.1	86.4
no instrumental lessons (%)	52	16.7	45.5
average years group singing	16.4	16.5	11.4

Table 1: Participant and choir demographics

3. RESULTS

3.1. Characteristics of the research instrument

Before the scale items were analysed, item ratings for order 1 were recoded to correspond with the values in order 2 (i.e. strongly agree = 5, agree = 4, disagree = 2 and strongly disagree = 1).

The survey items were first evaluated for kurtosis and skewness. Of the 66 items, 12 were normally skewed and 28 had normal kurtosis. However, because there is a general positive bias regarding many music activities (Morton, 2001) we expected deviance from normality in skewness and kurtosis. Therefore, all of the items were retained.

Secondly, the scale items were evaluated for order effects using Somers' *d*. Significant effects of order were found for 11 items. There appeared to be no systematic relationship between the 11 items and their placement within the 2 survey orders, but it was noted that 8 of the 11 items appeared in order 1 where the rating scale progressed from strongly disagree = 5 to strongly agree = 1. This rating system may be counter intuitive because the highest level of agreement receives the lowest rating.

Thirdly, the responses were examined to determine if there were differences based on choir. Only 3 items showed effects of choir. In all 3 instances the Christmas Choir had significantly fewer strongly agree responses that the other 2 choirs.

ISBN 3-931852-67-9
ISSN 1617-6847

Finally, the items related to each of the 3 levels of music involvement were treated as separate scales (Group Singing Scale, Listening Alone Scale and Listening with Others Scale), and reliability coefficients were computed for each scale to determine the strength of the relationship among the items of each scale and their relationship to the latent variable. Scores from 3 participants were excluded from the analysis as they had completed fewer than 90 % of the items. To compute reliability coefficients the negative items were reverse coded. For example, if the negative item *Singing in a choir does not improve concentration* had received a rating of 2 (disagree) it was reverse coded as 4 (agree) to indicate a positive connotation for the effects of choral singing on concentration. As shown in Table 2, the 3 alpha coefficients were very high suggesting that the items in each of the 3 scales are closely related to each other and the latent variable. Because of the similarity among the responses the variances were low, however the vast majority of inter-item correlations was significant at the .01 level.

	Items	Alpha	Mean	S. D.
Group Singing	23	0.8910	4.14	0.25
Listening Alone	23	0.8882	3.93	0.31
Listening with Others	23	0.9363	3.75	0.28

Table 2: Means, standard deviations and internal reliability coefficients for the 3 levels of participation scales

Given the above effects, the survey data were analysed to assess perceptions of the holistic health attributes of the 3 levels of music involvement.

3.2 Responses to positive and negative items

In the Group Singing Category the majority of the participants agreed and strongly agreed (69.3% to 95.9 %) with the positive items, and disagreed and strongly disagreed (69.3 to 98.4%) with the negative items. In the Listening Alone Category the percentage of participants who agreed and strongly agreed with the positive items ranged from 48.3 to 95.9% and the percentage of participants who disagreed and strongly disagreed with the negative items ranged from 57.2 to 97.6%. Similarly, in the Listening with Others Category the percentage of agreement with positive items and disagreement with negative items ranged from 43.5 to 89.5% and 50.8 to 94.4% respectively (see Table 3).

3.3 Average ratings by item

Average item ratings were calculated (each item of the 3 scales averaged across 121 participants) maintaining the reverse coding which was used to compute alpha. Comparisons of respective item ratings indicated that the Group Singing Scale received the highest average ratings for 16 of the 22 items; the Listening Alone Scale received the highest average ratings for 6 of the 22 items. The Listening with Others Scale received higher ratings than the Listening Alone Scale on 2 items, and a higher rating than the Group Singing Scale on 1 item. The overall mean ratings (mean of the ratings of the 22 items of each scale) for the Group Singing Scale, Listening Alone Scale and Listening with Others Scale were 4.14, 3.93 and 3.75 respectively.

	Group singing	Listening alone	Listening with others
agreement with positive items	69.3 - 95.9	48.3 - 95.9	43.5 - 89.5
disagreement with negative items	72.6 - 98.4	57.2 - 97.6	50.8 - 94.4

Table 3: Percentage of participants who agreed and strongly agreed with positive items and disagreed and strongly disagreed with negative items

4. DISCUSSION

The differences in the ratings of the items of the 3 music involvement scales suggest that active participation in choral singing was considered a more holistically beneficial activity than listening to music alone or listening to music in the company of others. Also, segregated listening was perceived to be more holistically beneficial than social listening.

The physiological studies reviewed in the introduction consistently reported increases in sIgA in the active participation conditions, and in the Beck et al. (2000) study increases in sIgA were detected even when self report measures indicated increased levels of stress in a performance condition. Beck et al. assert that, for the members of the professional chorale who participated in the study, choral performance may be both an “anxious and highly stimulating experience that leads adaptively to levels of positive feelings and satisfaction” (p. 104). In the present study many of the Group Singing Scale items which received higher ratings than both the listening scales (improves mood, is an exhilarating activity, makes me feel positive about myself, gives me a sense of achievement, is a creative experience, gives me a kind of high) indicate that singing promotes heightened arousal on a variety of behavioural dimensions.

An interesting comparison is found in a study of the effects of different levels of difficulty of mental arithmetic on levels of sIgA (Willemson et al., 2000). Whereas measurements of sIgA increased at all levels of difficulty, sIgA did not increase with increasing levels of difficulty. It appeared that task novelty was the most effective precursor of increases in sIgA as the level of sIgA remained consistent with the increase which occurred during the presentation of the first problem regardless of the level of difficulty of that problem. Since group singing requires continued attention to a number of musical components including note, rhythm and pitch accuracy, proper pronunciation of words and the blend of the various sections, novelty may be sustained over prolonged periods of participation. Conversely, listening to music may lack novelty, especially when the music is familiar, and therefore listening may not produce the same effect on sIgA as choral participation. This notion is consistent with concepts proposed in *Flow Theory* (Csikszentmihalyi, 1997) which suggest that life satisfaction is improved through mental engagement in activities which are appropriately challenging to promote learning and increase self-esteem.

ISBN 3-931852-67-9
ISSN 1617-6847

Items which received the highest ratings on the Listening Alone Scale (reduces stress, releases suppressed emotions, is physically relaxing, releases tension) are indicative of processes which promote stress reduction and restoration of a homeostatic state. The soothing effects of segregated listening may make this form of interaction with music particularly important as a therapeutic instrument in situations in which stress reduction is recommended to improve health.

In our survey, although the holistic health effects of listening with others were generally positive, they were weaker than those of isolated listening. Yet, in the Kreutz et al. (2003) study, cortisol was found to significantly decrease during group listening. It must be considered that in Kreutz et al. even though the listening condition was social it was quite different from many social listening situations in everyday life, where mental engagement with the music must compete with background noise and conversational interruptions. Therefore effects of group listening in many commonplace contexts may have fewer stress reduction properties than in the type of group listening experienced in Kreutz et al. (2003). It must also be considered that Beck et al. (2000) found that, for members of a professional chorale, cortisol decreased during practices. Perhaps for highly trained and accomplished choristers learning and perfecting the music is less stressful than for amateur singers.

Similarities between the results of the physiological and psychological studies suggest that different levels of music participation can have differential yet beneficial effects. Continued research may lead to more effective uses of diverse types of music activities to promote holistically healthy behaviours and practices which are appropriate to the requirements of therapeutic, industrial and educational environments.

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ISBN 3-931852-67-9
ISSN 1617-6847