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Different Pattern of Emotional Benefits Induced by Regular Singing and Music Listening in Dementia

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To the Editor: Behavioral and psychological symptoms of dementia (BPSD), such as depression and anxiety are highly prevalent symptoms in persons with dementia (PWDs) and represent one of the most complex, stressful, and costly aspects of dementia care[1]. Previous studies have demonstrated that the capacity of music to evoke emotions and memories is often preserved even in severe Alzheimer's disease (AD)[2] and that music therapy or musical activities can enhance mood and social interaction in PWDs, although more evidence is still needed[3-5]. In a recent randomized controlled trial (RCT)[6], we compared the cognitive and emotional effectiveness of two types of caregiver-implemented musical activities, singing and music listening, to standard care in mild-moderate dementia. Both singing and music listening improved performance on the MMSE and attention and executive function tests as well as reduced depression symptoms indexed by the Cornell-Brown Scale for Quality of Life in Dementia (CBS) total score[6]. Extending this study, our aim was to determine whether singing and music listening, which differ motorically, cognitively, and emotionally, would show a distinct pattern of emotional benefits on the subscales of the CBS.

METHODS

In the RCT[6], 89 PWD-caregiver dyads were randomized to a Singing Group (SG), Music Listening Group (MLG), or Control Group (CG). Inclusion criteria were mild-moderate dementia, no prior severe psychiatric illness or substance abuse, stable medication, and physically able to participate. In the SG and MLG, the dyads participated in a 10-week intervention involving weekly small-group sessions (1.5 h per session) and home training, with a focus on coaching the caregivers to use either singing (SG) or listening (MLG) of familiar songs together with the PWD as a part of everyday care. The CG received standard care and continued with normal daily activities. All PWDs underwent neuropsychological testing, which included assessment of depression and quality of life (QoL), before (baseline) and after (follow-up 1) the intervention and six months post-intervention (follow-up 2). Eighty-four PWDs completed the study up to follow-up 1 and 74 up to follow-up 2.

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Depression was assessed with the CBS[7] based on PWD interviews and informant reports. The CBS comprises 19 bipolar (rated from -2 to 2) items and five subscales measuring different depression symptoms: Mood-related signs (e.g., sadness – happiness), Ideational disturbances (e.g., self-deprecation – self-esteem), Behavioral disturbances (e.g., agitation – serenity), Physical signs (e.g., fatigue – energy), and Cyclic functions (e.g., difficulty falling asleep – falling asleep easily)[7]. The data were analyzed using General Linear Models (GLM) with follow-up score as a dependent variable, group as a factor, and baseline score as a covariate. Post hoc testing was performed on the change scores using Tukey's HSD.

RESULTS

Table 1 shows the CBS subscale scores for the PWDs in the three groups. At follow-up 1, there were significant group effects in two of the five domains: Behavioural disturbances [$F(1, 79) = 3.46$, $P = 0.036$] and Physical signs [$F(1, 79) = 5.20$, $P = 0.008$]. In Behavioural disturbances, the MLG improved more than the CG ($P = 0.005$) whereas the MLG and SG did not differ. In Physical signs, especially the SG ($P = 0.001$) but also the MLG ($P = 0.024$) improved more than the CG. The proportional gain of Physical signs from the CBS total score was clearly higher in the SG (38%) than in the MLG (10%) whereas for Behavioural disturbances this was more similar (18% vs. 26%). At the longitudinal follow-up 2, no significant group effects were observed on any of the subscales.

DISCUSSION

Previous studies that have included both active (singing or music therapy) and passive (listening-based) music interventions have reported short-term emotional benefits for both interventions but slightly larger positive effects on BPSD and arousal for active interventions in PWDs[8,9] and other neurological groups[10]. Our results extend these findings by showing that singing and music listening

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can target different domains of depression symptoms in mild-moderate dementia. Although both music intervention groups showed some benefits for negative affect and ideation (e.g., anxiety, pessimism, self-esteem) compared to the CG, the largest gains in the MLG were observed for the different behavioral disturbances of depression, such as agitation and loss of interest, whereas the SG showed pronounced gains in the physical signs of depression, including lack of energy and weight loss. This pattern of results is likely related to different nature of the interventions in terms of emotional valence and arousal: while both musical activities are highly pleasant and rewarding, listening to music and the associated reminiscence can be more calming and relaxing, whereas engaging in joint singing can be more energizing, refreshing, and stress-reducing.

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Table 1. Cornell-Brown Scale for Quality of Life Subscale Scores in the Intervention and Control Groups

CBS Subscale	Time	Singing Group (N = 27/23[a])	Music Listening Group (N = 29/28[a])	Control Group (N = 27/22[a])	*P*-Value[b]
		Mean ± Standard Deviation			
Mood-Related Signs (range -8 to 8)	Baseline	1.8 ± 3.3	0.9 ± 3.5	2.4 ± 2.5	
	Follow-Up 1	2.3 ± 2.7	2.3 ± 3.6	2.0 ± 2.9	0.216
	Follow-Up 2	1.4 ± 2.6	2.1 ± 2.8	1.7 ± 2.6	0.128
Ideational Disturbances (range -8 to 8)	Baseline	1.8 ± 2.9	0.7 ± 3.0	2.1 ± 2.7	
	Follow-Up 1	1.9 ± 2.6	1.9 ± 2.4	1.7 ± 2.3	0.215
	Follow-Up 2	1.4 ± 2.3	1.5 ± 2.6	2.3 ± 2.3	0.589
Behavioral Disturbances (range -8 to 8)	Baseline	0.3 ± 2.8	-1.2 ± 3.1	0.2 ± 2.4	
	Follow-Up 1	0.9 ± 2.7	0.4 ± 2.2	-0.1 ± 2.5	**0.036**
	Follow-Up 2	0.1 ± 2.5	-0.2 ± 2.3	0.1 ± 2.5	0.873
Physical Signs (range -6 to 6)	Baseline	0.3 ± 1.8	0.2 ± 2.2	1.4 ± 1.5	
	Follow-Up 1	1.4 ± 2.2	0.8 ± 1.9	0.8 ± 2.3	**0.008**
	Follow-Up 2	0.1 ± 1.8	0.8 ± 1.6	1.4 ± 1.4	0.150
Cyclic Functions (range -8 to 8)	Baseline	0.8 ± 2.3	0.0 ± 2.8	1.9 ± 3.0	
	Follow-Up 1	1.5 ± 2.2	1.3 ± 3.0	1.5 ± 2.5	0.410
	Follow-Up 2	1.7 ± 1.9	0.9 ± 2.4	1.8 ± 2.1	0.803

[a]At Follow-up 2

[b]From GLM with follow-up score as a dependent variable, group as a factor, and baseline score as a covariate