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**Choral singing experience and personal well-being. A Choral
Activity Perceived Benefits Scale (CAPBES)**

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Abstract

Numerous studies have demonstrated the capacity of choral singing to improve human well-being and that, in certain sectors of society (including older adults, prison populations, underprivileged social groups, and mentally illness groups), choral singing bears several benefits. Thus, the present descriptive study proposed a comprehensive structural model of the dimensions that comprise choral singing's contribution to individual well-being and aimed to explain these benefits. The study was conducted in a non-random sample of 1,513 adult Spanish singers of both sexes and variable age. An instrument was developed to assess the psychosocial benefits of choral singing, as perceived by singers; it comprised five constituent dimensions: satisfaction, ability, group engagement, belonging, and optimism. The instrument enabled us to assess how choral singing contributed to well-being, with adequate reliability (Cronbach's $\alpha = 0.917$) and validity. The system of relationships proposed by the model represents a plausible explanation regarding the benefits of choral practice and singing for well-being.

Key words: choral singing, human well-being, structural model, factor analysis, choirs,

1 Introduction

2 Spain, alone, is home to an estimated 3,000 amateur choirs and these are highly diverse in
3 type, with varying activities and member profiles (Fernández-Herranz, 2014). Furthermore,
4 the average life of choirs is 27.53 years ($\sigma = 24.51$), according to data collected in a study
5 done by Fernández-Herranz et al. (2017). Many perceived benefits derived from choral
6 practice have been reported, including spiritual and emotional benefits (Clift & Hancox,
7 2001; Creech et al., 2014), feelings of relaxation, improved breathing and posture, immune
8 system strengthening, and relief of muscular tension (Beck et al., 2000; Clift & Hancox,
9 2010). Other studies have also found that singing helps to stimulate the sympathetic nervous
10 system and boost production of secretory immunoglobulin A, further corroborating the
11 association between singing and immune function (Stacy et al., 2002; Unwin et al., 2002;
12 Kreutz et al., 2004).

13 Singing has a positive influence on affect measures and is psychologically beneficial to
14 people who report lower levels of general social support (Bullack et al., 2018). The strongest
15 motivating factors for voluntary participation in choirs, in some communities, may be a
16 personal enjoyment of singing and a positive social atmosphere for individuals and groups
17 (Einarsdottir & Gudmundsdottir, 2016; Judd & Pooley, 2014; Sandgren, 2009). To illustrate,
18 according to Lynch and Wilson (2018), choral singing is a potential mechanism for
19 mindfulness. Furthermore, Gridley et al. (2011) state that group singing increases self-
20 confidence, well-being, interpersonal skills, social capital (through participation in cultural
21 and community activities), and social networks; still, it also lowers feelings of social
22 isolation, depression, and anxiety. For people from different backgrounds, participation in
23 choral singing has contributed to developing competencies, improving their lives, well-being,
24 and health (Balsnes, 2012, 2018; Moss et al., 2018).

Furthermore, Clift and Hancox (2010) found that choir participants showed a decrease in depression and an improvement in emotional and physical well-being. Some of these benefits, related to the well-being concept, could be explained by the flow experience described by Csikszentmihály (2014). Flow is defined as “a sense of absolute presence when an individual engages completely with an activity” (Csikszentmihály, 2014, p. 136). Csikszentmihály (2014) further construes the activity of singing in a choir as a situation in which someone not only draws on moderate resources and abilities but also consciously takes on challenges that go beyond their imagined average level of competency. In this way, Csikszentmihály (2014, p. 185) characterizes choir situations as “being capable of inducing optimal states of arousal.”

Several studies have also highlighted the positive impact of choral music on specific social groups, such as older adults (Hays, 2005; Hays & Minichiello, 2005a; Lally, 2009; Skingley & Vella-Burrows, 2010; Skingley & Bungay, 2010; Davidson & Faulkner, 2010). Recent findings on the topic have also shown improved mental health and quality of life in older adults (Clements-Cortés, 2014, 2015a, 2015b; Clift et al., 2015, 2017; Johnson et al., 2016; Nilsson & Herrman, 2016; Nyquist & Nicholas, 2017), generally supporting the previous literature. That is, community choirs reduce loneliness and increase older adults’ interest in living, help to prevent dementia, and improve social relationships (Tan et al., 2018; Lamont et al., 2018; Johnson et al., 2020). Furthermore, Fu et al. (2018) stated that choral singing promotes memory, language retention, processing speech, and strengthens the respiratory muscles in older populations.

Research has also examined choir practices in other contexts, such as prison populations. Recent studies prove that choral singing in prisons can help inmates identify themselves as returning citizens to society (Cohen, 2019). Thus, choirs contribute to community cohesion

and empower both prison individuals and those in poverty (Bailey & Davidson, 2002; Goodwin, 2019).

Choral singing has also shown benefits for people with mental health problems, such as a sense of belonging, regularity of sleep, and improved eating habits, due to the need to attend rehearsals (Clift & Morrison, 2011; Eyre, 2011; Dingle et al., 2013). Furthermore, Young et al. (2019) affirm that people with Alzheimer's disease and other dementias receive various benefits from singing, and Shakespeare and Whieldon (2018) argue that a combination of singing and social engagement improves the functioning and mood of people with mental health problems, provides enjoyment, and enhances self-confidence, which may be experienced by people irrespective of their age or gender (Livesey et al., 2012; Williams et al., 2018).

Many studies have also addressed the use of choir singing for therapeutic ends and emotional support; these include its use in group therapy for adults diagnosed with cancer (Young, 2009), treatment of dysarthria (Tamplin, 2008), aphasia (Zumbansen et al., 2017), neurological impairments (Cohen, 1993), as well as enabling people who have suffered a stroke or have Parkinson's disease overcome feelings of social isolation, low mood, or communication difficulties (Fogg-Rogers et al., 2016).

Taken together, these antecedents lead us to propose that the concept of eudaemonic well-being (EWB) may offer a theoretical framework to explain the benefits of choral practice on participants. In effect, EWB has been conceptualized, according to the Aristotelian definition of eudaemonia (Aristotle, ca. 350 B.C.E./1925), as distinct from the hedonic view of well-being (the level of subjective experience of satisfaction). According to Waterman et al. (2010), EWB refers to "quality of life derived from the development of a person's best potentials and their application in the fulfilment of personally expressive, self-concordant

goals” (p. 41). In line with this, it is noteworthy that people’s own actions to develop their potential, achieve goals that provide fulfillment, and find purpose in life are key to defining EWB.

Ryff (1989) posits six central dimensions to describe EWB, as follows: (1) autonomy (which reflects personal convictions), (2) purpose in life (sense that one’s life has meaning, goals, and direction), (3) opportunity for personal growth (making use of one’s talents and potential), (4) environmental mastery (ability to manage the situations that reality presents), (5) positive relations with others (deep, meaningful connection to others), and (6) self-acceptance (knowing oneself and one’s limitations; see also Ryff, 2014). This structured definition of EWB connects the empirical evidence provided by studies that explored the impacts of being in a choir to the dimensions that comprise eudaemonia.

Furthermore, this definition supports the proposal for the use of the concept of choral eudaemonia in improving well-being. This concept refers to a series of benefits that are offered by choral practice and singing; for instance, the development of potential abilities and attainment of optimal levels of self-expression and fulfillment, openness to establishing positive relationships with others, and achievement of personal goals of deep emotional significance. Choir participation is, thus, a way for people to improve their quality of life and individual performance; effects which expand beyond the scope of choral practice itself.

The present study

The reviewed studies reflect the interest of researchers in showing the benefits of choral singing. However, given the extent of choral singing in Spain, there is a surprising dearth of information about the motivations and reasons that explain people’s involvement in choral activities, as well as its potential benefits. Furthermore, albeit these studies have focused mainly on the examination of specific indicators of well-being, they did not try to define a

comprehensive, global structure of the benefits of choral singing for those who practice it. Moreover, as far as we know, there is no tool to assess the benefits of choral singing in amateur participants, which is the main gap that this study aims to address. Thus, to provide a more comprehensive definition of the benefits associated with choir singing, the present study had the following goals:

- to define the benefits of choral singing in terms of physical, psychological, and social well-being among people involved in such activities in Spain.
- describe a comprehensive structure (not a mere specific effect) of the benefits of choral singing.
- and its main objective is to design and propose an instrument that enables the measurement of the benefits of choir involvement and practice for participants.

Accordingly, a research instrument called the *Choral Activity Perceived Benefits Scale (CAPBES)* is presented. This instrument is guided by a specific framework, based on the perception of well-being by singers, and serves to define the contributions and benefits involved in and the practice of choral activities. Furthermore, the following assumptions regarding choir participation guided the development of this tool:

- such participation is based on a personal search for the satisfaction of multiple needs that produce varied benefits.
- choral singing improves well-being and quality of life.
- two types of its potential benefits are instrumental objectives, and they relate to enjoyment and acquisition of musical abilities and mutual enjoyment (offering affiliation and social relationships).
- and choral singing improves self-fulfillment and presents opportunities to achieve personal goals.

Method

Design, participants, and procedure

This research utilized a descriptive design. The CAPBES was administered to 1,513 singers, of whom 862 were women. Furthermore, participants were classified into five age groups: younger than 25 (8,2%), 26–35 (13,6%), 36–45 (17,1%), 46–65 (50,7%), and older than 65 years (10,4%). Regarding education, 69,7% of the participants had attended higher education (university or equivalent level: 45,2%; associate degree: 24,5%), and a minority had received primary education (2,4%). Participants were recruited from the database of the National Center for Performing Arts and Music, provided by the Spanish Ministry of Culture. The selection criterion included those currently singing in a choral group; singers' experience in choral activities (i.e., how much time they had spent in such activities) was not considered. Participants received an invitation via email to participate in this study and responded to the assignment through online platform Google Docs; they received an email explaining the framework and characteristics of the study and the scoring of the tool. Furthermore, to avoid bias, the questionnaire was presented in a neutral way, whereby participants were informed that the tool served to obtain information about their participation in, their experiences with, the meaning for each one, and the contributions of the amateur singers. We guaranteed that their answers would be anonymous and analyzed only as aggregated data.

Instrument development

To design the 22-item, self-assessed CAPBES, we reviewed the theoretical foundation of and instruments related to the construct of choral singing experience. Some of the items were taken from a classical study conducted by Hylton (1981), which focused on the psychological, communicative, integrative, musical-artistic, spiritualistic, and achievement dimensions of choral singing experience. In addition, by considering the collective goals and social

relationships that occur in choral activities, other items were generated. The prototype tool comprised 65 items, which were assessed by expert judges (i.e., 35 choir directors) regarding whether the extent to which items reflected aspects of the experience of singing in a choir; this served to determine the adequacy of the indicators for the possible effects of participation in choral activities.

Based on the sample's data (N=1513), on the prototype tool we proceeded with reliability and validity analysis and items were paired down. Upon analyzing the factorial structure of the scale, items that shared similar factor loadings on two or more factors, or that had excessively low loadings on factors that were configured as robust, were eliminated. If any of the analyzed items were eliminated, we considered the corrected homogeneity index (the item/total correlation, without the analyzed item), and the Cronbach's alpha values of each subscale.

Thus, considering the coherence of the conceptual content of items, the construct of the tool, and the presence of redundant items, 22 items (out of the 65 items) were selected for the final scale; these were rated on a 5-point Likert-type scale, from 1 (disagreement) to 5 (the highest level of agreement). The final version of the *CAPBES* is shown in Supplementary File 1.

Data Analysis

Phase 1 of instrument validation deployed reliability analysis techniques and exploratory factor analysis (EFA). The total sample was randomly divided into two groups: samples for EFA (n=783) and samples for Confirmatory Factor Analysis (CFA) (n=729). In EFA, a robust estimation was made on the polychoric correlation matrix, which was considered the best analytical option; this was because the continuous variables were measured with ordinal scales (Flora & Curran, 2004).

Based on the dimensions revealed by EFA and the theoretical framework of this study, two models were subjected to CFA using structural equation modeling (SEM) techniques. The χ^2

1 statistic and various descriptive indexes were used to ascertain the models' goodness of fit to
2 the data, as well as to determine validity. In addition to CFA, exploratory structural equation
3 modeling (ESEM) was performed.

4 To conduct EFA, CFA, and ESEM, we utilized Factor 10.8.04 (Lorenzo-Seva & Ferrando,
5 2013), EQS 6.2 for Windows (Bentler & Wu, 2012), and the Mplus program 8.2,
6 respectively. To calculate the various goodness of fit indices and residuals, we used the
7 method of maximum likelihood estimation; this method was chosen as it is less sensitive to
8 multivariate non-normal distributions, which were shown in the data (Mardia's coefficient >
9 5).

10 **Results**

11 *Reliability and EFA*

12 The scale had a Cronbach's alpha of 0.917; based on prior research, this denotes high internal
13 consistency (Morales et al., 2003). EFA was conducted on a random, split-half sample of the
14 data (n=783) to examine the factor structure of the 22 *CAPBES* items. When EFA was
15 applied, the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy yielded a value of 0.923
16 (close to one), and Bartlett's test of sphericity ($p < 0.001$) yielded a value of $\chi^2=9591,4$ (df
17 =231).

18 Table 1 presents the solution obtained by applying EFA -using a matrix of polychoric
19 correlations (weighted least squares method with Promax rotation)- to questionnaire answers.
20 It was observed that all indicators showed high factor loadings on one of the dimensions,
21 whereas no appreciable loading was observed for any other factor. The EFA identified five
22 components for extraction with values greater than 1, together explaining 75,74% of the total
23 variance and yielding adequate goodness of fit measures (root mean square error of
24 approximation [RMSEA]=0.017; comparative fit index [CFI]=0.999; Tucker Lewis index

[TLI]=0.999; goodness of fit index [GFI]= 0.998). Moreover, the root mean square of residuals (RMSR) was 0.0222, hence found to be lower than the expected mean value of RMSR according to Kelley's criterion (which is 0.358). This criterion, advised for parallel analysis, was not met in the factorial solutions with two factors (RMSR=0.0738), three factors (RMSR=0.0536), and four factors (RMSR=0.0395). Thus, the rotation was indicative of a factor structure with items grouped into five factors.

Reliability analysis of the subscales, with items distributed into five factors, confirmed that their internal consistency ranged from Cronbach's $\alpha = 0.855$ to 0.949, which was adequate, considering the low number of items in each factor. Homogeneity indexes were also satisfactory (Morales et al., 2003), with acceptable item-total correlations higher than 0.30. Therefore, the proposed items pointed to between-subject differences in the factors resulting from this exploration.

Based on these results, we operationalized the resulting latent variables as a function of observable variables; this led us to conclude that the benefits of choral singing included the following five dimensions: *satisfaction*, *ability*, *group engagement*, *belonging*, and *optimism*.

The first dimension, *satisfaction*, was related to the achievement of goals and purposes of choral music practice, especially regarding the participation in choir concerts; it included items such as the following: item 19, "It fills me with pride to give good concerts"; item 23, "I feel satisfied when, after a concert, people recognize my work and effort"; and item 25, "I find the enthusiasm and excitement of giving concerts to be gratifying."

1

2 **Table 1**

3 ***Exploratory Factor Analysis Results of the Choral Activity Perceived Benefits Scale***
 4 ***(CAPBES; N= 783).***

			\bar{X}	σ	Factors					Explained Variance
					1	2	3	4	5	
Ability	$\alpha=0.855$	item 1	4.49	0.77					0.720	5.36%
		item 3	4.31	0.84					0.824	
		item 4	4.60	0.68					0.836	
		item 7	4.01	0.95					0.562	
Satisfaction	$\alpha = 0.907$	item 19	4.56	0.76		0.926				1.93%
		item 20	4.03	1.03		0.845				
		item 23	4.54	0.70		0.861				
		item 25	4.48	0.76		0.697				
Optimism	$\alpha = 0.944$	item 36	4.40	0.85	0.596					46.88%
		item 37	4.26	0.87	0.509					
		item 40	3.98	0.99	0.588					
		item 42	4.07	1.03	1.025					
		item 43	3.79	1.06	0.931					
Group Engagement	$\alpha = 0.867$	item 44	4.27	0.87	0.966					6,78%
		item 51	3.67	1.15		0.808				
		item 52	3.72	1.09		0.874				
		item 54	2.13	1.26		0.381				
Belonging	$\alpha = 0.949$	item 55	4.31	0.81				0.929		5.78%
		item 56	4.00	0.99				0.836		
		item 57	3.70	1.10				0.903		
		item 58	4.29	0.86				0.819		
		item 59	4.22	0.85				0.946		
Cronbach's Alpha =0.944			Total Explained Variance							75.74%

Note. Extraction Method: Unweighted Least Squares. Dispersion Matrix: Polychoric Correlations.

Rotation Method: Promax.

(for ease of reading, factor loadings under 0.30 do not appear)

\bar{X} = mean; σ = standard deviation

5

The second dimension, *ability*, included a set of motivations related to learning, self-improvement, and the acquisition of skills and competencies related to choir practice. It included items such as the followings: item 4, “Singing in the choir has helped attune my ear;” item 3, “In choir, I have learned to control my voice;” and item 1, “Singing in the choir has expanded my music knowledge.”

The third dimension, *group engagement*, included the acquisition and improvement of social relationship skills through group interactions involved in choir participation. Examples of items in this dimension include the followings: item 52, “Singing in the choir has taught me to be more tolerant of other people’s mistakes,” and item 51, “The choir has taught me to get along with other people better.”

The dimension referred to as *belonging* tapped into the social relationship benefits derived from singing in a choir. It included items such as the followings: item 59, “I like being around the people in my choir;” item 57, “In choir, I feel like a part of a tight-knit group of friends;” and item 56, “My choir mates bring very important things to my life.”

The *optimism* dimension consisted of items reflecting the emotional benefits of choral singing and included items such as the followings: item 42, “After singing, I feel full of energy and vitality;” item 43, “Singing makes me feel ‘in shape’;” and item 40, “Singing in the choir makes me feel more content in my life.”

There were significant correlations between all resulting factors (Table 2). Furthermore, second-order EFA suggested that these factors had a one-dimensional factor structure (Table 2). Thus, we obtained a second-order factor a factor synthesizing all 22 items and explaining 55,51% of the variance; this was theoretically interpreted as the construct named *choral activity perceived benefits*.

Table 2

Second-Order Factor Analysis of the Choral Activity Perceived Benefits Scale (CAPBES; N= 783).

	Component	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
1. Optimism	.833					
2. Belonging	.743	.551*				
3. Satisfaction	.757	.542*	.407*			
4. Ability	.672	.459*	.309*	.480*		
5. Group engagement	.711	.493*	.485*	.377*	.306*	

Note. Extraction Method: Unweighted Least Squares.

*Correlation is significant at the level of 0.01 (bivariate).

CFA

We evaluated two rival measurement models, both theoretically and empirically, to ascertain the underlying factor structure. Results showed that the model with five correlated factors yielded the best goodness of fit indices. To confirm the factor structure, CFA was conducted on the second random sample (n=729). The model displayed acceptable statistical fit, with the Satorra-Bentler scaled χ^2 statistic having a value of S-B $\chi^2=485,75$ (df=199, $p < 0.00000$). With respect to parsimony and goodness of fit, normed chi-square (2,44) fell within the parameters recommended by Iacobucci (2010), according to whom values under three are acceptable.

In terms of goodness of fit indices, the normed fit index (NFI) had a value of 0.918, while the Non-Normed Fit Index (NNFI or TLI) was 0.942, and the CFI measured 0.950; all the above indicated satisfactory goodness of fit (i.e., between 0.9 and 1). Furthermore, the RMSEA was 0.044. Thus, all indices reflected acceptable goodness of fit between the postulated

theoretical model and the sample's data; namely, the model was not demonstrated as incorrect and proved to be one of the possible acceptable models (Hair et al., 1999).

In a more in-depth analysis of the proposed model's standardized solution (Figure 1), we established that all parameters measured were positive and significant. The items presented adequate reliability (factor loadings above 0.59 and R^2 above 0.34), except for item 54; it had a factor loading of 0.33 and $R^2=0.110$. Despite these findings, we believed item 54 tapped into a basic motivation (i.e., the need for opportunities to relate to others), and since it did not interfere with the comprehension of the remaining scale structure, we decided to retain it.

The composite reliability of each construct ranged from 0.48 to 0.88, over and above the recommended minimum (Hair et al., 1999). With respect to the constructs' convergent validity, the average variance extracted from the first-order factors ranged from 0.26 to 0.55. Finally, we observed that the root of mean variance extracted for each construct was higher than each one's correlation with any other construct, providing evidence of discriminant validity (Chin, 1998).

In addition to CFA, ESEM was performed and its results displayed acceptable statistical fit, with the χ^2 statistic having a value of 952.35 (df=199, $p < 0.0000$). In terms of goodness of fit indices, the TLI was 0.929 and the CFI was 0.939. All the above indicated satisfactory goodness of fit (i.e., between 0.9 and 1). Furthermore, the RMSEA was 0.050 and the Standardized Root Mean Square Residual (SRMR) was 0.045. Thus, the indices reflected acceptable goodness of fit.



1

2 **Figure 1. Standardized Solution of Estimated Parameters in the Measurement Model of**
3 **the Choral Activity Perceived Benefits Scale (CAPBES; N=729).**

Descriptive analysis of the statistical results and sociodemographic data

Three sociodemographic variables were analyzed in relation to the *CAPBES*: sex, age, and education (Table 3). Between-group comparisons were made to detect differences in their levels of well-being.

Table 3

Means for the Choral Activity Perceived Benefits Scale (CAPBES) According to Sociodemographic Variables.

	MCAPBES	Std. dev.
Sex		
Female (57%)	91.297	11.709
Male (43%)	88.161	12.854
Age		
younger than 25 years (8.2%)	91.967	11.753
26–36 years (13.6%)	90.640	11.382
36–45 years (17.1%)	91.686	11.080
45–65 years (50.7%)	89.118	12.319
over 65 years of age (10.4%)	88.645	15.051
Education		
Primary school (2.4%)	95.555	9.191
Middle school graduate (5%)	94.039	12.278
Mid-level vocational education (2.8%)	93.119	12.776
Higher vocational education (6.1%)	91.053	13.378
High school graduate (13.9%)	90.511	12.838
Associate degree (24.5%)	89.132	12.536
University education or equivalent (45.2%)	89.121	11.805

In terms of sex, choral singing contributed more to well-being in women than men ($Z = -4.926$, $p < 0.01$). Regarding age, significant differences were found between participants

younger than 25 years and those aged 45–65 years ($Z = -2.700$, $p < 0.01$), and between those aged 36–45 and those aged 45–65 years ($Z = -2.772$, $p < 0.01$).

In terms of what choral singing brings to their lives, participants with higher levels of education scored lower, whereas those with elementary or high school education scored the highest ($X^2(6) = 30.387$, $p = 0.000$). These results showed a decrease as respondents' education increased. While this was an observable trend, it is important to remember that average scores were high in all groups within the sample, so across the board, participants perceived choir practice to substantially improve their well-being.

Discussion

Choral singing has been shown to improve well-being and to provide several benefits to those who engage in it. Although several researchers have identified numerous positive benefits of choral singing, there is a lack of a comprehensive tool that identifies the global structure of the benefits of choral singing and assesses these among amateur participants. Thus, the main objective of this study was to comprehensively define the comprehensive structure of the benefits of amateur choir participation. We considered this study especially relevant given, among other arguments, the data collected in earlier descriptive studies (Fernández-Herranz et al., 2017), which highlighted the quantitative importance of social participation in choral activities, and the duration and persistence of people's commitment to the choir once they got involved. In this sense, this study's main contribution was to propose a useful instrument to evaluate the benefits of engaging and continuously participating in choral activities.

The results of this study suggested that the benefits of choral singing can be described using a structure formed by the five components of the *CAPBES* (*satisfaction, ability, group engagement, belonging, and optimism*). As demonstrated, previous studies confirm the relevance of several of these components. For example, *belonging* has been described in

several previous studies; Stewart and Lonsdale (2016) found that choral singing benefits are associated with the feeling of belonging to a group, while Einarsdottir and Gudmundsdottir (2016) suggest that *satisfaction* and *optimism* are linked to a positive social atmosphere. The importance of group identity (described in our results as *group engagement*) has been corroborated by other studies, such as Dingle et al. (2013), in people with mental health problems.

This study provided an instrument that allows us to define the structure of the benefits of choral singing linked to the five basic components of the proposed model. This model is also supported by Moss et al. (2018), who define the benefits of choral singing, in addition to the physical and physiological benefits, by indicators related to social connection, development of cognitive skills, enjoyment, and mood enhancement (*optimism*). Thus, the structure obtained with the *CAPBES* is supported by some of the evidence presented by Moss et al. (2018), who further pointed out the need to continue working on the definition of these factors. Moreover, the present study provided an instrument that allows for the systematic assessment of the different components of choral singing that other studies have separately confirmed.

The proposed theoretical model, based on these five components, was thoroughly tested through CFA and yielded better goodness of fit indices than other alternative models.

The resulting model was interpreted based on the eudaemonic approach to psychological well-being. In effect, the various benefits of choir participation may be related to the definitions of EWB; Ryff's important review of advances in the research and practice of EWB demands that the notion of well-being be integrated with indicators of health, biological regulation, genetics, and neuroscience, what she calls "the substance of people's lives" (Ryff, 2014, p. 23). In line with this, we noted the various contexts in which people live and their

important implications for well-being. Specifically, this study examined the choir setting and its related activities as highly useful in improving participants' well-being, and the five components ascertained in this study (i.e., the components of the CAPBES) were individually and altogether conceptually related to the usual categories described by the most widely used measures of EWB, particularly the questionnaire for EWB (Waterman, et al, 2010). Thus, the factor here called Optimism refers to developing personal potential and knowing one's limitations (category of self-discovery); it relates to Waterman et al.'s category six (Enjoyment of activities as personally expressive). The factor here referred to as Belonging has to do with evolving social goals that are important and meaningful to the individual; it aligns with Waterman et al.'s category Intense involvement in activities. The Satisfaction factor appraises efforts made to pursue goals of personal significance; it corresponds to Waterman et al.'s Investment of significant effort in the pursuit of excellence. Similarly, the Ability factor is connected to Perceived development of one's best potentials; it taps the particular satisfaction that comes from making an effort to achieve goals related to personal abilities and developing one's potential. Last, the factor known as Group Engagement, absent from the categories Waterman et al. described, refers to the context of relationship and mutual social support that choir participation entails.

This study proposed an instrument that effectively captured the levels of personal well-being associated with continuous participation in a choir. In response to Ryff's appeal (2014) regarding the need to examine possible contexts that favor EWB, this study posited choir as a setting that may offer important benefits in terms of self-realization, improved abilities, discovering new goals of personal significance, and expanding one's network of interpersonal relationships. The above factors are closely connected to something beyond mere self-satisfaction (described by the term "hedonic well-being"), as they relate also to the

continuous, active engagement in choral activities, leading to the discovery and achievement of new and meaningful goals, as well as to the valuing of the efforts made in their pursuit.

Therefore, choral activity is a powerful musical educational experience. It is also an opportunity, or context, through which individuals can be encouraged to get involved and discover important new horizons for themselves. As such, its importance extends beyond its mere musical activities. Choir is also a means of fostering human well-being and improving quality of life; by developing abilities and talents, it helps people discover new meaning in life. Therefore, the proposed scale evaluated and demonstrated the important benefits of choral singing from a psycho-social perspective.

Limitations and further developments

Although several important insights were obtained, the present study had several limitations. First, due to the characteristics of the *CAPBES*, it was only possible to obtain the results of participants in choral singing and not compared with other activities. Thus, future studies should compare the results obtained with this scale with those of other studies. This could contribute to establishing, with more clarity, the specific benefits of choral singing for individuals compared with other activities, such as dance, instrumental music and so on.

This study described the basic structure of the benefits, as recognized by participants, of partaking in choral activities and staying in them. This provides a possible future direction for research in terms of the possible relationship between the recognition of these benefits and the motivation to participate and remain in choirs. For example, future studies should answer questions considering whether musical learning or social activity is/are more important in choral activity than the actual choral practice. This may be useful in describing the motivational structure of choir participants.

1 The proposed scale allowed for the first definition of the needs and goals that define the
2 involvement of people in choral activities. In the future, the results of this scale should be
3 investigated in terms of its relation to other variables. They could, exemplifying, analyze the
4 relationship between the basic motivations (which we registered with this scale) and
5 personality traits investigations on the five components of the scale we developed would be
6 particularly interesting. This could contribute to establishing validity parameters of the
7 proposed scale.

8 In summary, the proposed instrument, even with its limitations, is the first contribution to
9 establishing a comprehensive global structure to better understand the benefits of choral
10 singing. Furthermore, this instrument could be used in future longitudinal studies to more
11 precisely explain the benefits of choral singing that, as previously mentioned, involves people
12 across varied contexts and demographics.

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Supplemental material

Supplemental material for this article is available online.

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