

The musical experience impacts on the elderly octogenarians' cognition a pilot study

Abstract

The elderly population growth is a world phenomenon, and in Brazil, the modifications are done in a radical and very accelerated way. Currently, the data indicate that the elderly form a population of 30 million individuals and this number is bound to increase to 57 million by 2040. The present pilot study aimed at investigating the musical experience impact on the octogenarian's cognition in the city of São João del Rei/Minas Gerais/Brazil. The research was approved by the ethics committee with a favorable assent from the Human Research Ethics Committee of the São João del Rei Federal University(UFSJ) –Number 3.685.143 (05/11/2019). All the participants completed 2 questionnaires: The Mini-Mental and the Portuguese version of the Brief Music Experience Questionnaire (Brief MEQ). The statistical analyses searched to compare the extreme score values from the BRIEF M.E.Q Questionnaire, that is, the 1st Quartile X 4th Quartile of this sample were compared in relation to the performance in the Mini-Mental (cognitive performance). The results indicate that the group with more intense musical experience (4th Quartile) show scores significantly higher in the Mini-Mental ($p < 0.01$). It was concluded that the musical practices constitute themselves as an important protective strategy for elderly cognition, having a favorable impact in the life quality of this population. New studies, with a more robust sampling, will be necessary to evaluate this theme more clearly, also adding other variables such as physical activity, socio-economical and schooling levels.

Keywords: cognition in elders, mini-mental, musical experience

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Introduction

The elderly population growth is a world phenomenon, and in Brazil, the modifications are done in a radical and very accelerated way.¹ The percentage of the Brazilian population over 60 has been growing proportionally to the demographic data.² In 1940, the elderly (in Brazil) represented 4% of the population. Since that year up to 2010 there was a leap of 7% with the elderly population raising to 11%. Currently, the data indicate that the elderly form a population of 30 million individuals and this number is bound to increase to 57 million by 2040.

One of the concerns of the World Health Organization (WHO) has been about healthy aging. In this aspect, the psychological reserve (cognitive stimulation) has been pointed out as something that can decrease the fragility of elderly subjects.³ Musical practices can configure themselves as one of these strategies of cognitive stimulation.

Objective

To investigate the musical experience impact on the octogenarian's cognition in the city of São João del Rei/Minas Gerais/Brazil.

Music and cognition

Recent studies in neuroscience show the positive impact of musical practices over the cognition and development of the brain.⁴ There are data that indicate that the musical practices help to improve the performance level in other cognitive areas in which the mobilization of different abilities are necessary. An evidence of this process is that the language processing of individuals who had the habit of musical practices was faster.⁵ On the other hand, the more efficient processing

of the rhythmic and speech notions is related to another cognitive function: the attention. It was shown that participants with extensive formal musical training showed a superior performance in temporal discrimination tasks which demanded attention.⁶

Among many other evidences, the literature data indicate that the cognitive stimuli configure itself as a protective and preventive strategy for the cognitive reserve in the elderly.

Subjects and methods

The present research included 24 subjects in the pilot study with an average age of 83.7, being 07 men and 17 women residents in the city of São João Del Rei/Minas Gerais/Brazil. The research was approved by the ethics committee with a favorable assent from the Human Research Ethics Committee of the São João del Rei Federal University (UFSJ) - Number 3.685.143 (05/11/2019).

The inclusion criteria were the following:

1. Subjects within the ages from 80 to 89, 11 months and 29 days up to the end of the sampling;
2. Subjects that were in psychiatric conditions to complete the questionnaires;
3. Subjects that were not undergoing any psycho- neurological treatment;
4. Subjects with at least 5 years of schooling.

The subjects that DID NOT find themselves in psychological conditions for the questionnaire completion; or undergoing psycho-neurological treatment and had less than 5 years of schooling, were excluded.

The elderly that accepted to take part on the research received explanations about all the objective procedures and participation conditions in the research, and, once they agreed with the procedures, they signed and rubricated all the pages of the Informed Consent Form.

Then, all the participants completed the 02 questionnaires: The Mini-Mental and the Portuguese version of the Brief Music Experience Questionnaire (Brief MEQ). The Mental State Mini Exam (Mini-Mental) is the most used cognitive screening test in the world.⁷

Table 1 Groups descriptive data

Scores on mini-mental and on brief MEQ			
Brief MEQ (Low)	Mini-mental (Low)	Brief MEQ (High)	Mini-mental (High)
Average: 135.72	Average: 22.81	Average: 183.38	Average: 27.15
	Standard deviation: 5.05		Standard deviation: 1.77
Teste "t" Student (independente samples) P<0.01			

The Brief MEQ results were divided in two categories: High scores (from 164 points on) and medium-low scores (under 164 points). These two categories were compared in relation to the performance on the Mini-Mental.

The statistical analyses aimed at establishing the relations among the variables of these instruments: cognitive performance and level of musical engagement. The Bioestat®, version 5.0. program for statistical analyses was used. The calculations of the averages, standard deviations, etc, and tests to verify the normality of the population distribution of the research subjects were applied. Parametric statistical tests were applied given the normal distributions of the studied population.

Results and discussion

The descriptive analyses are shown in the Table 01 below:

The statistical analysis pointed that the results among the groups showed a significant statistical difference demonstrating that the subjects placed in the 4th quartile of the sample (high scores on the BRIEF M.E.Q.) showed a significantly higher score on the Mini-Mental in relation to the subjects situated in the 1st quartile ($p \leq 0.01$), as is shown in the Figure 1 below:



Figure 1 Cognitive development in groups with high and low musical experience.

The Portuguese version of the Brief Music Experience Questionnaire (Brief MEQ) is composed by 53 items and the answers are given in a kind of Likert scale of 5 points.⁸

The Brief MEQ results were distributed in a normal curve in which the extremes were compared (1st quartile X 4th quartile). Of the 24 subjects that were included in the sampling 07 were in the 1st quartile and 06 were in the 4th quartile. The quantitative data are shown in Table 1.

Conclusion

The data of this pilot study suggest that the musical practices can configure themselves as an important protective factor for the cognitive reserve and this, in turn, impacts favorably in the life quality of the elderly population. On the other hand, there is the necessity to re-apply this methodological design in a more robust sampling. Furthermore, a deepening in this theme is recommended, including other variables such as physical activities, socio-economical and schooling levels.

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Conflicts of interest

The authors declare that there are no conflicts of interests in this present research.

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