

**Research Paper****Executive Functioning and Creative Thinking in Bilinguals and Monolinguals Aged 60-80 Years Living in Tehran, Iran**Nasim Sadat Hosseinizadeh<sup>1</sup>, \*Mohammad Hossein Abdollahi<sup>2</sup>, Mahnaz Shahgholian<sup>3</sup>

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**Citation** Hosseinizadeh N, Abdollahi MH, Shahgholian M. [Executive Functioning and Creative Thinking in Bilinguals and Monolinguals Aged 60-80 Years Living in Tehran, Iran (Persian)]. Iranian Journal of Ageing. 2019; 13(4):480-493. <https://doi.org/10.32598/SIJA.13.4.480> <https://doi.org/10.32598/SIJA.13.4.480>**Received:** 09 May 2018**Accepted:** 03 Nov 2018**Available Online:** 01 Jan 2019**Keywords:**Executive functioning,  
Creative thinking,  
Bilingualism, Elderly**ABSTRACT****Objectives** The present study compared executive functions and creative thinking in older monolingual and bilingual adults.**Methods & Materials** This was a descriptive study with a causal-comparative design. Study population consisted of all elderly people enjoying parks in Tehran City, Iran to spend their leisure time. Of whom, 100 elderlies, including 50 monolinguals (Persian), and 50 bilinguals (Azeri-Persian) aged 60-80 years were selected using convenience sampling method and based on the inclusion criteria. The subjects were fully conscious, able to answer the questions, and accessible. The data collection tools were digit span memory test, Wechsler adult intelligence scale, D<sup>2</sup> test of attention, continuous performance test, and Torrance tests of creative thinking. For analyzing the obtained data, multivariate analysis of variance and pairwise comparison tests were used.**Results** There was a significant difference between bilinguals and monolinguals in terms of forward span memory, backward span memory, and total working memory. Also, bilinguals reported a higher performance in the dimensions of selective attention and the dimensions of cognitive inhibition.**Conclusion** Bilingualism can improve cognitive function in the elderly. It is suggested that in future studies, while assessing the effect of bilingualism on the prevention of dementia, people be encouraged to learn a second language.**Extended Abstract****1. Objectives**

**M**any studies have reported that bilinguals are intellectually superior to their monolingual counterparts. Research in the United States and India have suggested that speaking 2 languages can protect a person from cognitive impair-

ment after stroke. These studies indicate that bilingual people have a more normal cognitive functioning than monolingual subjects after a stroke [1]. It seems that the process of bilingual acquisition and their simultaneous management and control, increase the ability of bilingual people to properly control the resources and cognitive functions. Moreover, they use symbolic and abstract representations for problem solving and creative thinking [2]. The current study aimed to compare

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executive functioning and creative thinking in older monolingual and bilingual adults.

## 2. Methods and Materials

This was a descriptive study with a causal-comparative design. It was approved by the Ethics Committee of Kharazmi University. Study population consisted of all elderly people visiting parks in Tehran City, Iran to spend leisure time. Of whom, 100 elderlies, including 50 monolinguals (Persian), and 50 bilinguals (Azeri-Persian) aged 60-80 years were selected using convenience sampling method. The inclusion criteria considered the study participants' age, marital status, educational level, financial status, and bilingualism or monolingualism. The subjects were fully conscious, able to answer the questions, and accessible. The data collection tools were digit span memory test, Wechsler adult intelligence scale, D<sup>2</sup> test of attention, continuous performance test, and Torrance tests of creative thinking.

## 3. Results

Data analysis was conducted by SPSS. Kolmogorov-Smirnov test was used to test the normality of data distribution. In addition, the Chi-squared test and t test were performed to assess the homogeneity of samples in terms of age, marital status, education, financial status, and bilingualism or monolingualism. For answering research questions, Multivariate Analysis of Variance (MANOVA) and pairwise comparisons (Least Significant Difference [LSD]) were used.

Results indicated a significant difference between the mean scores of bilinguals and monolinguals in terms of forward span memory, backward span memory, and total working memory, where bilinguals reported higher performance. In other words, bilinguals had higher mean scores in working memory and its dimensions. As a result, they have a better working memory in comparison with monolinguals. With respect to the mean scores of the dimensions of selective attention (processed targets, concentration performance, and the number of incorrect responses), there was also a significant difference between the 2 groups. In addition, processed targets and the concentration performance of bilinguals were better, and monolinguals had a higher number of incorrect responses. In other words, bilingual elderly subjects had higher selective attention and lower attentional error in comparison with monolingual elderly participants.

Results of this study also reported a significant difference between the study groups in terms of cognitive inhibition and its dimensions (correct response, omission error, commitment error, and response time). Bilinguals had a higher number of correct responses, while monolinguals had higher mean scores in terms of omission error, commitment error, and response time. Two study groups also significantly differed in terms of creativity and its dimensions (innovation, fluency, flexibility), where bilinguals had higher mean scores of innovation and flexibility, and monolinguals had higher mean fluency.

With respect to elaboration, as another dimension of creativity, no significant difference was found between bilinguals and monolinguals. Overall, bilingual elderlies had better creativity in terms of innovation and flexibility, while monolingual elderlies were better in terms of elaboration.

## 4. Conclusion

The results of this study revealed that bilingualism can improve the cognitive functions. Therefore, it seems that encouraging people to learn a second language is useful. Previous studies have reported the negative impact of bilingualism on the cognitive abilities of individuals, and considered it as an inhibitor of cognitive development. However, most recent cognitive development studies have reported that it not only lacks any negative impact on the development and acquisition of cognitive ability, but even has a positive effect on those items, too. Learning a second language in childhood is associated with an increase in the cognitive ability and mental processes, compared to monolingual children.

Various studies present a list of bilingualism benefits on cognitive abilities such as intelligence, creativity, divergent thinking, deductive reasoning, classification skills, problem solving, learning styles, and thinking flexibility.

## Ethical Considerations

### Compliance with ethical guidelines

This study has been approved by the Research Ethics Committee of Kharazmi University.

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The present paper was extracted from the MSc. thesis of the first author, in Department of Psychology, Faculty of Psychology and Education, Kharazmi University.

### **Authors contributions**

All authors contributed in preparing this article.

### **Conflict of interest**

The authors declared no conflict of interest.

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