

**Research Paper****Role of Performance in the Stroop Test in Anticipation of Anxiety and Aggression in the Elderly in Ardabil****\*Esmail Sadri Damirchi<sup>1</sup>, Sanaz Behbuei<sup>2</sup>, Arezoo Mojarrad<sup>1</sup>**

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**ABSTRACT****Objectives** Currently, the life expectancy of the elderly has been rising considerably. The present study investigated the role of strop function in the prediction of anxiety and fall self-efficacy in elderly at the city of Ardabil.**Methods & Materials** The study design was correlational. The population cohort consisted of all elderly males living in the elderly homes in Ardabil in 2017. Among these, a sample of 200 subjects was selected by the available sampling method. The anxiety, fall self-efficacy, and Stroop questionnaires were used for data collection. The data were analyzed by Pearson's correlation and regression analysis.**Results** A significant relationship was observed between anxiety/fall self-efficacy and Strop function. Stroop's performance could negatively predict anxiety as well as predict the fall self-efficacy in the elderly.**Conclusion** The performance of Stroop test in the elderly could be improved by training classes and various treatment groups that can indirectly decrease the amount of anxiety and increase the fall self-efficacy in the elderly.**Key words:**

Strop function, Anxiety, Fall self-efficacy, Elderly

**Extended Abstract****1. Objectives**

Currently, due to an increase in life expectancy, the old age phenomenon has been under intensive focus more than before due to the associated issues and dilemmas. Aging is an inevitable biological process involving all living beings, and in some cases, unpleasant experiences [1]. According to international estimates, since 1419, the elderly population of Iran has grown rapidly as compared to other locations as well as the average growth rate of the elderly worldwide. Until

1424, Iran overtook the average rate of population growth of the elderly and surpassed that of Asia within the subsequent 5 years [2]. Over the last 50 years, the proportion and number of elderly individuals have increased in a majority of the Third World countries [3]. Given the rising population of the elderly and the associated problems, the present study investigated the role of Stroop performance with respect to anxiety and self-efficacy in falling of the elderly >60 years of age.

**2. Methods and Materials**

The research design was descriptive correlational. The statistical population included all elderly men

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>60-year-old, who were residents of the nursing home of Ardebil city in 2017. Among these, a sample of 200 individuals was selected by the available sampling method. The present study was approved by the Welfare Organization of Ardebil Committee and conducted after coordination with the Welfare Organization of the city of Ardebil and Rayehe Omid Nursing Home; appropriate research and ethical permissions were obtained prior to the study. Data were analyzed using Pearson's correlation test and regression analysis.  $P < 0.05$  was considered as statistically significant. The following questionnaires were used to collect the information:

### Stroop Test

Stroop Test was invented in 1935 by Stroop to evaluate the proprietary attention and cognitive flexibility. Since then, several variations of this test have been available. The reliability of this test for the first and second cards was 0.81, and that for the third and fourth cards was 0.80 [4].

### Beck Anxiety Inventory

Beck Anxiety Inventory was introduced by Iron Beck et al. (1990). This questionnaire specifically measured

the severity of the symptoms of clinical anxiety in individuals. This questionnaire contains 21 options. The coefficient of internal consistency (alpha coefficient) was 0.92, and its validity by retest method at an interval of 1 week was 0.75 [5]. Kaviani and Mousavi (1999) also reported the coefficient of the validity of this questionnaire as 0.72 and there-validation factor with a 1-month interval as 0.83; the Cronbach's alpha coefficient was 0.92 [40].

### Falls Self-efficacy Scale (FES-I)

Falls Self-efficacy Scale (FES-I) comprises of 16 items invented by Yardley et al. The items in this questionnaire had four options: "I am not at all worried" to "I am quite worried" and the score of each subject, will be the total points from 16 questions. The scores range was 16–64. A high score indicated fear of falling or low self-efficacy [6]. Furthermore, Borhani Nezhad et al. (2015) reported the Cronbach's alpha coefficient as 0.909 [43].

## 3. Results

Herein, 200 married elderly men >60-year-old [Mean (SD)=47.66(6.576)] participated in the study. The de-

**Table 1.** Descriptive statistics of research variables

	Components	Mean	Standard Deviation
	Self-Efficacy in Falling	58.5350	4.9559
	Anxiety	14.121	10.266
First card	Correct	24.965	0.232
	Reaction	22.815	7.113
	Reaction	0.576	3.592
	Error	2.595	6.579
Second card	Correct	23.388	4.733
	Reaction	26.205	13.263
	Reaction	10.059	19.843
	Error	0.740	1.849
Third card	Correct	24.245	1.847
	Reaction	25.489	10.029
	Reaction	6.487	10.968
	Error	3.070	4.521
Fourth card	Correct	21.900	4.514
	Reaction	49.472	54.784
	Reaction	37.2766	54.708
	Error	3.070	4.5218

**Table 2.** Results of Pearson correlation for investigating the relationship of self-efficacy in falling and anxiety with Stroop performance

		Anxiety	Self-Efficacy in Falling
Third card	Correct	** 0.318	** 0.211
	Reaction	** -0.328	** -0.282
	Reaction	0.009	** 0.311
	Error	** 0.386	** 0.141
Fourth card	Correct	** 0.203	* 0.111
	Reaction	** -0.196	** 0.193
	Reaction	** 0.200	** 0.464
	Error	* 0.141	** 0.251

\*\* P<0.01, \* P<0.05

**Table 3.** Regression results to predict anxiety and self-efficacy in falling based on Stroop's performance

Variable	B	Standard Deviation	T	Significance
Anxiety	-0.465	0.220	-2.119	**0.032
Self-efficacy in falling	0.507	0.089	5.232	** 0.000

\*\* P<0.01, \* P<0.05

scriptive statistics of the variables studied are reported in [Table 1](#).

As observed in [Table 1](#), the highest average score belonged to self-efficacy variable of falling (58.550) and to the amount of reaction to the fourth card (49.472); the fourth card reaction score was 37.2766. Also, the highest standard deviation score corresponding to the score of the fourth card reaction was 78.548, and the fourth card's score was 54.708. The Pearson's correlation test was used to examine the relationship between self-efficacy in falling and anxiety by Stroop test performance. The Kolmogorov-Smirnov test was employed before the Pearson's test in order to assess the normality of the variable. The results did not show any significance. Therefore, the distribution of the variables was normal, and Pearson's test could be used ([Table 2](#)).

As seen in [Table 2](#), a significant correlation was established between Stroop's performance (third and fourth card) in all the four sub-scales including errors, integrity, reaction, and interference and anxiety as well as self-efficacy in falling in the elderly. In addition, regression analysis assessed the level of anxiety prediction and self-efficacy in falling based on Stroop test performance. The regression test results are reported in [Table 3](#).

As observed in [Table 3](#), both anxiety and self-efficacy variables of falling can be predicted by Stroop test performance. The results indicated that the performance

of the test predicts the anxiety and self-efficacy in falling negatively.

#### 4. Conclusion

The Stroop test performance was significantly correlated to anxiety, which was in agreement with the studies by Reiner et al. [7] and Kertz et al. [8]. The results also showed that Stroop performance was significantly correlated to the self-efficacy in falling, which was in agreement with the study by Holford et al. [9] and Walson et al. [10]. The result of the regression test also indicated that Stroop test performance predicted the anxiety and self-efficacy in the falling of the elderly. Therefore, Stroop test performance can be improved in the elderly by conducting training classes and performing different group treatments in order to indirectly reduce the amount of anxiety and increase the self-efficacy in the elderly.

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#### Conflict of Interest

The authors declared no conflicts of interest.