

# A Prediction Model of Cognitive Failures Based on Personality Dimensions and Lifestyle in the Elderly

Abdollah Moatamedy<sup>1</sup>, Yalda Tangestani\*<sup>2</sup>

## Abstract

**Objective:** The aim of the present study was to predict cognitive failures in the elderly based on personality dimensions and lifestyle and examine the mediating role of negative emotions as a model.

**Methods:** This research is of correlation type and its statistical population included all the elderly in Tehran. In the present study, 150 elderly persons participated by convenience sampling method. Research instruments were cognitive failures, Eysenck Personality Inventory, lifestyle scale and Negative emotions. In order to analyze the data, the path analysis and stepwise regression analysis were used.

**Results:** The results showed that personality dimensions and lifestyle can significantly and negatively predict emotions and cognitive failures and finally with respect to the proposed model, it was found that lifestyle and personality dimensions could significantly predict cognitive failures through the mediation negative emotions.

**Conclusions:** The result obtained from this study can be used to identify the groups vulnerable to cognitive failures and make necessary recommendations to the experts to understand the causes and etiology, consultation and prevention of cognitive failures.

**Keywords:** cognitive failures, elderly, negative emotions, personality dimensions, lifestyle.

## Introduction

Cognition includes the processes of language, memory, sensing the position of judge, perform actions, problem-solving and decision-making (Postma, 2016), and old age causes cognitive failures in performance (Coca, 2016; Rodrigues, 2013). Age increasing affects cognitive processes and increases a person's likelihood of cognitive failures through the influence on cognitive function. (Dixon, 2004; Mecacci, Righi, 2006; Wallace, Vodanovich, Rauch, 2005; Craik, Salthouse, 2000; Dixon, 2004; Kaplan, 2007).

Cognitive failures are the inability of a person to

complete tasks that would normally be able to do it (Gallagher & et al, 2016; Tyrovolas & et al, 2015; Castel, Balota, 2007). Many researchers have found that the cognitive failures include distract, memory problems, blunders and not to recall names (Feng, 2016; Wallace, 2002; Broadbent, 1982; Larson 1991; Robertson, 1997; Mecacci, 2004; Mecacci, Righi, 2006; Wallace, Popp, 2006). The frequency of cognitive failures has been reported in women more than men (David, 2016). In review of literature, the relationship between cognitive failures with different variables such as emotional disorders (Sullivan, 2007), worry and tension (Mahoney, 1998; Wallace, 2006), accidents (Larson, 1997), fatigue (Wallace, 2006), and coping strategies (Matthews, 1990) were obtained. Furthermore, a

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1. Associated Professor, Allame Tabataba'i University, Tehran, Iran  
2. Psychology Ph.D Student, Allame Tabataba'i University, Tehran, Iran  
\* Corresponding author, Email: ytangestani@gmail.com

significant positive correlation between cognitive failures and performance on assignments was obtained (Manly, Tang, Schup, 2005). Also cognitive failures are related to personality traits, anxiety and stress (Mahiney, 1998) and coping with stress (Matthews, 1990). The studies of Woodfor (2007) indicate that with increasing age, changes occur in the brain that causes differences in the ways of thinking and behavior. According to their studies, cognitive failures and dementia are the interface between increasing age. The cause of cognitive failures and dementia is not only the cognitive changes; in fact, recent studies suggest that other factors such as personality dimensions (Giluk, 2009), emotional factors such as stress (Mahoney, 1998; Wallace, 2006), quality of life and social support (Gallagher, 2016), anxiety and depression (Snowdon, 2002), can lead to these changes and have an important role in cognitive failures. One of the most important factors in predicting cognitive failures is personality dimensions. In cognitive science, cognitive processing can be explained in two different ways. One way is that the process of focusing on the neural basis and reviewed biological and neurological explanation - the life and the way it is presented, is that the processes are explained according to individual differences including personality (Matthews, 2001). In the field of personality, Eysenck suggested two principles of Extraversion and Neuroticism as the two main dimensions of personality. According to Eysenck, Extraversion is related to with positive emotions and Neuroticism is related to negative emotions including anxiety (Matthews, 1999).

Garay in his theory introduced two dimensions of anxiety and impulsivity by rotating the dimensions of Extraversion and Neuroticism and the dimension of anxiety is highly related to Introversion and Neuroticism and impulsivity is highly related to Extraversion and Neuroticism. Based on the Garay's Pattern, anxiety is highly related to Neuroticism and

Introversion (Matthews, 2001). Wallace and Newman (1998) in their study used a few tasks of data processing to show that the performance of the of Neuroticism men and women is much lower than those in non-Neuroticism. Researchers considered impaired executive functions in Neuroticism as the reason. According to Giluk (2009), the error in correct interpretation of triggers and events, is the characteristic of Neuroticism people. Lieberman and Rosenthal (2001) showed that the processing of simple cognitive tasks cannot be seen in the brain's but and Introversion people have poor performance and much error in difficult cognitive tasks. The findings of Fink (2005) showed that cognitive tasks Extraverts have low arousal, performance and lower error rates than Introverts. Some other research results show that the level of cortical arousal during cognitive processing more than Extraverts and Introverts and when the optimal arousal level goes up more cortical arousal, anxiety is called, which is involved (Fink, Raush; 2005). The relationship between personality dimensions and Cognitive failures shown in a study (Shahgholian, 2012); but potentially mediating variables that affect this relationship will generally remain unknown and few studies intermediate models examined the relationship between personality dimensions and cognitive failures in clinical and general populations. One purpose of this study is to investigate the influence of personality dimensions in cognitive failures. In addition, according to the totality of variables in this study, the assumption that most probably some psychological structures have a mediating role in the relationship between these variables have one of these variables is Negative emotions. According to the literature, the Negative emotions and cognitive performance in the elderly is significant. According to the literature,

there is a significant difference between the negative emotions and cognitive performance in the elderly (West, 2000). One of the reasons that can be stated about this correlation is the theory of age-related cognitive changes forehead piece (Shimamura, 1995), a potential mechanism that supports cognitive function, the cortex - striatum - thalamic - cortical, which this ring is strongly associated with frontal lobe executive cognitive function (Liotti, 2001). In addition to cognitive dysfunction in the elderly with depression can be the result of age-related decline in brain metabolism (Petit, 1998) or the decrease in brain volume prefrontal and orbitofrontal region (Corwin, 1990). Negative emotions increase the causes and evolution of cognitive failures in the elderly (Brody, 2001). Thus, it seems that one of the most important factors in predicting cognitive failures, Negative emotions that is a part of life. Negative emotions are strongly correlated with the pathology of the cognitive failures (Sullivan, 2007) refer to the overall dimensions of mental, emotional turmoil, and a wide range of adverse effects mood states (Watson, 1988). Due to the fact that depression and anxiety are common psychological problems in the elderly and in particular the quality of life, compromising performance and ultimately increase their mortality rate (Sargent-Cox, 2014). Considering the totality of the findings in the field of research variables reinforces the assumption that the strong possibilities of some psychological constructs such as Negative emotions have a mediating role in the relationship between these variables. On the other hand, the evidence shows that, unlike previously thought, physical aging is influenced by genes, but lifestyle-related elements (which can change), the same ratios have a powerful influence on aging (Moatamedi, 2005). Thus, it seems that other variables may affect cognitive

failures lifestyle. Healthy lifestyle is a way of life that provides, maintains and promotes the health and welfare of the person (Doorn, 2010). Ways of life in adults are associated with mental and physical health status (Postma, 2016). It was observed that a healthy lifestyle in increased life expectancy improved quality of life, physical and mental health plays a decisive role in preventing a variety of diseases (Krueger, 2003). In the area of lifestyle, the elderly living in nursing homes experience more stress than the elderly in their homes and have fewer skills to deal with it (Mathew, 2009), mobility, balance and physical performance less (Geren, 2006). The results of the study of Liepert and Spiegler (2004), Noriega (2004) and Suwazono (2003), showed that improper lifestyle affects the mental health of people; those who had healthier lifestyle were less likely to have negative personality characteristics. Thus, it seems that it provides the field of deviance and psychiatric disorders, lifestyle and her inability to deal with life problems (Sajadi, 2006). Pinquart (2007), showed that lifestyle is different in men and women. Therefore, it seems that non-compliance with healthier lifestyle, with increased all-cause mortality, along with those of their healthy lifestyle occupation, higher life expectancy and better quality of life. After the evaluation of the lifestyle of the elderly in their health education to prevent many disorders and improve quality of life and their health status is of the utmost importance and it seems that amending the habits of the preventive strategies life can be a lot of failures in recognition. Given that lifestyle effects on mental and physical health of individuals, little research has focused on the relationship between lifestyle and cognitive failures and the types of research are undoubtedly important. Especially non-patients aged man and woman are a combination of cognitive failures is

common among them.

That is, an examination of cognitive failures should provide us with more information regarding the underlying cognitive systems that give rise to such errors (attentional and memorial systems) as well as giving some indication of how these systems and their resulting errors are interrelated. This study aims to examine the relationships among these variables according to theoretical principles to deal with the lifestyle and personality dimensions and intermediary Negative emotions, cognitive failures predicted.

## Method

### Participants and Procedure

This research is descriptive - correlational design that analysis of data was done by (AMOS-18 and SPSS) statistical software. In this study, 150 elderly people were selected by convenience sampling. The inclusion criteria for the study were having age more than 60 years. The exclusion criteria were severe physical illness, mental retardation and other mental disorders other than anxiety, depression and cognitive failures that control participants were screened by a physician. It was a blind study. The tools used in this study included the following items.

### Ethical statement

After the information through questionnaires, direct dialogue with the elderly, any ambiguity had to be resolved by questionnaires. First, with permission from the Center for the elderly, the researchers studied that the environment questionnaires were designed in accordance with sampling in the elderly. Participants in the study were entirely justified for all individuals who participated in the study as volunteer. As well as the name and address of the request be confidential and will be fully respected and the data will be analyzed only in groups. Participants also had a written consent. After ensuring the completeness of questionnaires, data analysis was done by software

and analysis and interpretation of the data were necessary.

### Measures

#### *Cognitive failures:*

This questionnaire has been prepared by Broadbent, Cooper; Fitzgerald and Parkes (1980). The questionnaire contains 24 items on a five-point Likert scale ranging from "never" to "always". Macacci and Righi (2006) reported Cronbach's alpha coefficient for the total scale 0.81. In the study of Abolghasemi (2009), Cronbach's alpha for the total scale was 0.84 and in the study of Shahgholian (2012), it was 0.82 for the total scale and subscales, respectively, 0.79, 0.64, 0.66 and 0.62.

#### *Personality Inventory Eysenck:*

To determine the four groups, the revised form of Eysenck Personality Questionnaire was used. This form has 100 female yes - no. Eysenck, Eysenck and Barrett (1985), Cronbach's alpha coefficient for the four scales, respectively, 0.90, 0.88, 0.81 and 0.82 in men vary from 850; vary from 850, 0.73 and 0.79 in women. Iran's Cronbach's alpha coefficient for the scale was obtained as 0.79, 0.86, 0.79 and 0.71 (Kavyani, 2005).

*Questionnaire Negative Emotions* (Depression, anxiety, stress) DASS-21 the whole four-part questionnaire for measuring depression, anxiety and stress are widely used (Laura Alho, 2015).

The validity and reliability of these tools are desirable. The internal consistency for negative emotions scale by using Cronbach's alpha 0.89 and its dimensions (depression, anxiety and stress), are respectively, 0.71, 0.72 and 0.78 (Besharat, 2010).

#### *Lifestyle questionnaire:*

This questionnaire has been prepared by Eshaghi, Farajzadegan and Babak (2009). The questionnaire was a demographic segment and a main part contains 46 questions are as follows: 15 questions on prevention, 5 questions on stress management and 7 questions on social

relationships and interpersonal. To verify reliability and validity, factor analysis was used for data reduction. Confirm its validity and Cronbach's alpha coefficient was calculated to 0.76 (Samadi, 2007).

### Results

Demographic data showed that participants in the study ranged in age between 50-70 years and the mean age of participants was 57.2 years. 140 of these women (93.3%) and 10 patients (6.7%), 116 patients were married (77.3%) and 34 patients (22.7%) were single. Table 1 shows the zero-order correlation matrix. There is a significant relationship between these variables, enabling the analysis provides.

In the identified models, according to the

hypothesis proposed was organized. At first, the participants in the R statistical software AMOS-18 was presented. The relationship between lifestyle, personality dimensions and cognitive failures mediation Negative emotions, the proposed model was calculated and processing. Figure 1 shows the proposed model study.

Personality dimensions and lifestyle variables in this model as exogenous variables, Negative emotions as a mediator and cognitive failures as endogenous variables are Discussed.

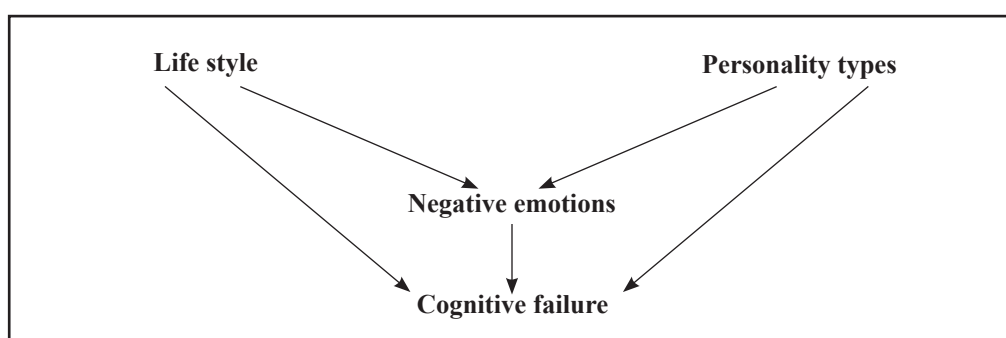
Table 2 directions and standardized coefficients proposed model, the causal relation between personality dimensions and cognitive failures and lifestyle through the intermediary Negative emotions, show.

Based on the path coefficients and critical

**Table 1:** Correlation matrix of variables

Variable	Cognitive failures	life style	Personality types	Negative emotions
Cognitive failures	1	0.38**	0.41**	0.55**
life style		1	0.26**	0.42**
Personality types			1	0.40**
Negative emotions				1

\*\*p<0.01



**Figure 1:** The research proposal

**Table 2:** Indicators of the direct effects of variables in the model

Directions Parameters	Standard factor B	S.E	P
Lifestyle to negative emotions	0.35	0.15	0.01
Personality types to negative emotions	0.31	0.05	0.01
Negative emotions to cognitive failure	0.40	0.02	0.01
personality types to cognitive failure	0.22	0.01	0.01
Lifestyle to cognitive failure	0.15	0.05	0.03

**Table 3:** Indicators indirect effects of variables in the model

Parameters	Personality types	life style	Negative emotions
Negative emotions	0	0	0
Cognitive Failures	0.12	0.13	0

values presented in Table 2 can be seen the whole route are significant.

Table 3 compares the effects of variables to determine the most effective due to the indirect effects of the overall effect shows the variables.

### Discussion and Conclusion

In analyzing the research data, the approved model indicates the mediating role of Negative emotions, in prediction of cognitive failures by personality dimensions and lifestyle. System (memorial, attentive, or otherwise) that could conceivably occur. A cognitive failure causes disorder in the executive performance of the persona and causes negative mood. These include lapses of attention, mind wandering, failures of memory, action failures, etc. (Feng, 2016; Kesler, et al, 2012). In many cases, a person's cognitive failures in executive function disorder were created and creates negative mood (Snowdon, 2002; Dalby, Mahiney, 1998; Wallece, 2006; Mahiney, 1998; Sullivan, 1998). Therefore, among the studied variables, the variable of Personality dimensions is more related to the variable of lifestyle for cognitive failures and negative emotions. According to Sheraton personality, the aspects of life can be a predictor of cognitive failure is relatively strong. In this regard, the results show that people who have Negative emotions are capable of holding the attention on a stimulus Nate (Vinkers, 2004). Thus, it seems that increased negative emotions cause and evolution cognitive failures in the elderly (Brody, 2001). Some studies also show cognitive failures with emotional disorders (Sullivan, 2007), Anxiety and stress ( Mahiney, 1998 ; Wallece, 2006 )

and coping strategies ( Matthews, 1990 ) are related. In fact, recent studies suggest that emotional factors such as stress, negative emotions and anxiety can play a fundamental role in cognitive failures (Unsworth, et al, 2012; Tyrovolas, et al, 2015; Wallece, 2003; Sullivan, 2007). Thus, it seems that one of the most important factors in predicting cognitive failures is negative emotions that are a part of life (Sullivan, 2007). Depression and anxiety in the elderly with mental health problems, in particular the quality of life, causes loss of efficiency and increased mortality (Sargent-Cox, 2014). Also in the context of personality dimensions , There is overlap between the five factor model of personality and negative affect ( Clark , 1999 ; Markon, 2005 ); Neuroticism And Extraverts Are equated with positive and negative emotionality (Kotov, 2010; Clark, 1999; Chien & et al, 2007; Kemp, 2005). Several studies have shown those lifestyles associated with mental and physical health status of adults are (Samadi, 2007). Observe a healthy lifestyle in increased life expectancy, improved quality of life, physical and mental health plays a decisive role and is also effective in the prevention of various diseases (Krueger, 2003). The study results of Liepert and Spiegler (2004), Noriega (2004), Suwazono (2003), showed that improper lifestyle affects the mental health of people; those who were healthier lifestyle were less likely to have negative personality characteristics. Therefore, it seems that it provides the field of deviance and psychiatric disorders, lifestyle and her inability to deal with life problems (Samadi, 2007). Qualitative Research Thiamwong

(2013) on the lifestyle of the elderly in Taiwan, showed that elderly people for physical activity to maintain a healthy lifestyle, maintaining mental activities through creativity and intellectual games, simple living, the sparing behavior, helping families and participate in activities social, away from stress, honesty in communication, and lack of charity (Samadi & et al, 2007). Research findings of Fink (2005), Da showed that in cognitive tasks extroverts had low arousal, performance and lower error rates without a camel to introverts. The results of a similar study showed that introverts had better Performance than extroverts (Beauducel , 2006), some other research results show that the level of cortical arousal during most introverts than extroverts' people is cognitive processing. In addition, when the arousal level is higher than optimal arousal anxiety that most called the cerebral cortex is involved (Fink; Rausch, 2005). These limitations include difficulty in generalization of the results to other populations, the use of sampling and data collection by using the questionnaire. In this regard, it is suggested that in future research, the sampling method can be used and the impact of these factors on other age groups can be also studied.

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