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**DYNAMICS OF MENTAL RESOURCES IN THE ELDERLY AND
OLD AGE**

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Abstract

The generalization of the data obtained in the study of elderly people is aimed at analyzing the dynamics of predictors of successful aging. A polymetodynamic study was conducted, which included comprehensive geriatric health assessment, cognitive functioning assessment, severity of depression assessment feelings of loneliness assessment. The study assessed the subjective age, cognitive (understanding of deception and memorization of faces) and emotional (recognition and differentiation face emotions) components of Theory of mind. The rates of time flow in different age periods were estimated. To assess subjective satisfaction, a short questionnaire on the quality of life (WHOQOL-BREF, WHOQOL Group) was used. The socio-demographic characteristics were analyzed. The data were compared for three age groups: 55-60, 64-74, and 75-90 years old. Multiple regression analysis of predictors of life quality showed the presence of universal factors and age dynamics. Universal predictors of aging indicate that the subjective assessment of well-being is interrelated with marital status, low rates of depression and feelings of loneliness, a sense of being younger than your real age, the ability to recognize emotions and memorize people's faces, which allows the elderly people to assess their quality of life and health as being prosperous and satisfying to them. However, older people experience changes in the predictors of successful aging. During the elderly age, there is a reorganization of mental resources (subjective age, theory of mind, estimates of the rate of time), in conjunction with the socio-demographic characteristics, physical and functional safety that determine the successful course of aging.

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Keywords: Quality of life, geriatric assessment, subjective age, theory of mind, aging, perception of time.



1. Introduction

Worldwide, there has been an increase in the proportion of the elderly population. In Russia, elderly people make up about 25% of the population and this proportion is constantly growing. There is also a shift in the understanding of old age and aging overall, from a model that focuses on diseases to positive gerontology with ideas about prosperous aging while maintaining autonomy, self-realization, and psychological stability (Martinez-Maldonado, Vivaldo-Martínez, & Mendoza-Nunez, 2016). Intensive studying of various conditions and factors of successful aging is currently observed. Epidemiological data on the psychological health of people of the "third" (55-74 years) and "fourth" (75-90 years) age groups point to an increase in *cognitive* and *mental disorders* (Sidorov, 2017). The state of mental health of people of late age is currently recognized as unsatisfactory due to social stresses, which changed the stereotype of life, refracting into individually significant somatic, family, professional, spiritual and other psycho-traumatic factors (Aleksandrovsky et al., 2018). Consequently, individual strategies and mechanisms for prosperous aging, enhancing the use of one's own strengths and resources for adapting to the problems of old age and aging are of key importance (Ancyferova, 2006; Dumitrache, Rubio, & Rubio-Herrera, 2018).

Mental resources as internal individual abilities act as a means of regulating one's own life activity and vitality. A whole range of mental resources for prosperous aging has been identified: wisdom, extraversion, optimism, hope, cognitive reassessment of the situation (Khazova, 2013; Strizhickaya, 2013; Mejía, Ryan, Gonzalez, & Smith, 2017; Dumitrache et al., 2018).

2. Problem Statement

In our work we focus on the cognitive-emotional resources of the elderly which are of great importance for successful aging. The study of subjective age as a cognitive phenomenon of self-perception of age showed that it can serve as a predictor of not only quality of life and health, but also of activity in everyday life, dementia and even death (Stephan, Sutin, & Terracciano, 2018; Stephan, Sutin, Luchetti, & Terracciano, 2018; Rippon & Steptoe, 2018; Xiao et al., 2019).

The aging process involves a new stage of socialization, finding oneself in society, mastering new roles and changing ideas about oneself. Theory of mind is considered by us as one of the cognitive mechanisms of socialization, since it provides a cognitive-emotional understanding of one's own ideas in comparison with ideas about other people, their understanding of situations.

Representing oneself in a temporal perspective, understanding time becomes a necessary component of adaptation at any age, but this issue becomes crucial during the period of aging. It has been repeatedly emphasized that these competencies are included in the regulation of various aspects of the life of a person of older age and act as factors of successful aging. Note that changes in the perception of time and the model of theory of mind are an integral part of a series of neurological and mental disorders of older age, which allows us to consider these changes as one of the biopsychosocial markers of the course of aging.

However, ideas about mental resources in the process of aging and connection with psychological well-being and health require further research, detailing and interpretation.

The focus of this work is aimed at studying the most important mental resources of the elderly: theory of mind (cognitive and emotional components), subjective age, and orientation in time.

3. Research Questions

In contrast to the works studying individual mental resources, in our study we implemented a multi-method approach to analysis. In addition, the data were obtained through personal contact with the study participants. The work was carried out in conjunction with postgraduate student Melyohin (Melyohin & Sergienko, 2015). The main purpose of our work is the description of the system of studied mental resources and their age dynamics in the process of aging. The following hypotheses were tested:

- Cognitive-emotional and temporal competencies are mental resources associated with healthy aging, the composition of which dynamically changes during the elderly ages.
- In contrast to chronological age, individual differences in subjective age in elderly age make it possible to describe in more detail the specifics of changes in temporal and cognitive-emotional competences.
- In the elderly age, there are transformations in the “situational” and “biographical” levels of time perception in the form of changes in the orientation in time, the subjective speed of the passage of time and the degree of connectedness of time zones (past, present and future).
- In the elderly age, there are changes in the emotional and cognitive components of the theory of mind, expressed in the difficulties of memorizing other people's faces, socio-emotional selectivity in recognizing and differentiating emotions, and also in understanding deception.

4. Purpose of the Study

The goal of this paper is to study the dynamics of subjective resources in the elderly ages as predictors of the subjective quality of life, as an indicator of successful aging.

5. Research Methods

The study was conducted in the following blocks.

5.1. Comprehensive geriatric health assessment:

- Physical Health: assessment of health of a geriatric respondent (Geriatric Health Questionnaire, University of Iowa Health Care); geriatric scale of accumulation of disorders (Zakharov & Voznesenskaya, 2013);
- Functional status: a brief questionnaire on the quality of life by the World Health Organization (Group, 1998);
- Cognitive functioning: Montreal cognitive assessment scale (Zakharov & Voznesenskaya, 2013);
- Emotional state: Geriatric Depression Scale-30 (Zakharov & Voznesenskaya, 2013); California Loneliness Scale (Russell, 1996);
- Subjective age assessment: Barak's (1987) subjective age assessment scale (Cognitive age-decade scale).

5.2. Assessment of temporary competence:

- “Situational” scale: a general orientation index from the Montreal cognitive assessment scale (MoCA); definition method; drawing method; time awareness test;
- Biographical scale: test of choice of metaphors; a test for evaluating the perception of the rate of flow of time at different age periods by R. Lemlich; T. Cottle's circular test; methodology “Who am I” by M. Kuhn (Twenty Statements Test, Kuhn, 1954); modification of free description of time zones by L.V. Borozdina (as cited in Melyohin, 2015).

5.3. Evaluation of cognitive-emotional competence:

- The emotional component of theory of mind: the Pennsylvania tests for recognition (Penn Emotion Recognition Task-40) and differentiation (Penn Measured Emotion Discrimination Task) of emotions in the face;
- The cognitive component of theory of mind: a test for assessing the ability of a pragmatic interpretation of life events (Pragmatic Interpretation Short Stories); memorization of faces of individuals) (as cited in Sergienko & Melekhin, 2016).

The data were compared for three age groups: 55-60 (N=120), 64-74 (N=120), and 75-90 (N=50) years old.

Statistical analysis was performed using IBM SPSS v.23 and Microsoft Office Excel 2016 for OS X, using the following data processing methods: descriptive analysis; Mann-Whitney U-test; Kruskal-Wallis test; chi-square; the rank correlation coefficient R - Spearman; exploratory factor analysis by the method of main components, with rotation of factors by the Varimax method; multiple regression analysis.

6. Findings

We describe only the most generalized results of regression analysis.

Table 1 presents the results of the regression analysis of variables that are predictors of quality of life, which serve as indicators of the subjective assessment of successful aging.

Table 01. Results of the regression analysis (step-by-step inclusion method) of the connection of mental resources, socio-demographic, psychological characteristics and satisfaction with the quality of life of the respondents of three age groups

Dependent variable	Factors (predictors)	Beta Factor Values		
		55-60 years	61-74 years	75-90 years
Overall satisfaction with quality of life (WHOQOL-BREF)	N	120	120	50
	R ²	0,683	0,759	0,674
	Significance of the model (p)	0,001	0,001	0,001
	Constants	20,410**	22,423**	19,100**
	The level of education	0,221*	0,237*	-
	Marital status	0,300*	0,244*	0,200*
	Work status	0,311*	0,345*	-
	Depression symptoms	-0,321*	-0,392*	-0,375**

	Subjective feeling of loneliness	-0,223*	-0,319*	-0355*
	Polymorbidity index	-	-0,169	-0,189*
	Cognitive functioning	-	-	0,174*
	Subjective age	-0,326*	-0,311*	-0,298*
	Subjective feeling of the passing of time	0,254*	0,238*	0,200*
	Recognition of emotions in the face	0,241*	0,270*	0,214*
	Differentiation of emotions in the face	0,210*	0,223*	-
	Memory of faces (direct reproduction)	-	-	0,177*
	Memory of faces (delayed reproduction)	0,173*	0,211*	0,232*
	Understanding deception	-	0,221*	0,289*

Note: * p <0.05, ** p <0.01.

Table 1 shows the changes in the ratio of predictors of successful aging in the elderly age.

The following universal predictors that are significant for all age groups can be distinguished: marital status as a sociodemographic characteristic, severity of symptoms of depression and feelings of loneliness as indicators of mental health, subjective age, feeling of the speed of passing of time, recognition of emotional states in the face and facial memory as psychological resources. Universal predictors of aging indicate that the subjective assessment of well-being is interrelated with marital status, i.e. maintaining close relationships, low rates of depression and feelings of loneliness, which also make a significant contribution to the subjective quality of life. Feeling younger with respect to your real age, the ability to recognize emotions and memorize people's faces, which is necessary for adequate social interactions, allows elderly people to assess their quality of life and health as prosperous and satisfying them.

However, older people experience changes in the predictors of successful aging. In addition to the universal predictors, the growth in the amount of diseases (polymorbidity index) and the key indicator of the deception understanding of theory of mind model begin to play a role. The lower the level of polymorbidity and the better the understanding of deception, the higher the assessment of subjective well-being. Integrating into a common predictor system, these two variables enhance the ability to cope with aging issues. On the one hand, the level of physical health, and on the other the ability to recognize deception, ensure the success of social interactions.

In the group of older people (75-90 years old), the level of education and working status cease to be predictors of subjective well-being, but the importance of marital status does not lose its meaning. From the indicators of geriatric status, cognitive functioning appears as a predictor and a necessary link in maintaining a sense of well-being. The memory of faces and the recognition of deception makes the social interaction of older people more confident, with the differentiation of emotions in the face losing its importance, leaving the most important resources in social orientation.

It should be noted that the change of predictors occurs in the group of elderly people (65-74 years), with further reorganization in older age, making up the system of resources for successful aging. In old age, cognitive preservation, the ability to understand the markers of social interactions while maintaining marital status (close relationships) allow people to experience satisfaction with their own lives.

7. Conclusion

1. The importance of mental resources (understanding of emotions, deception), subjective cognitive illusion of age (feeling younger than one's years) for subjective satisfaction with life and health is shown.
2. Changes occur in the psychological systems of resources during the aging process, in which the growth in the amount of diseases and cognitive preservation, along with psychological predictors, become a condition for life satisfaction.
3. Among the socio-demographic characteristics of successful aging, marital status stands out, i.e. having close relationships, as well as the level of education and work status playing important roles in successful aging in older age (55-64 and 65-74 years).
4. An important predictor of aging is the expression of depression and feelings of loneliness throughout aging, and in older people they are complemented by cognitive preservation.

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