Section 2
BRAIN RESOURCES IN A CHANGING WORLD

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Neurocognitive functions as an indicator of subjective adaptation to involutionary processes

Abstract. This neuropsychological study focuses on cognitive correlates of a successful process of adaptation to involutional processes. We examined 94 elderly people without pronounced cognitive impairments. It was shown that adaptation positively correlates with cognitive functions and negatively with comorbidity; the most significant predictors of successful adaptation to involutional processes are semantic memory and the rate of anticipatory processes.

Keywords: adaptation, gerontology, gerontopsychology, cognitive functions, late age, neuropsychology.

Introduction. In our study, we define normal aging as a set of cognitive, motivational, and characterological factors that ensure satisfaction and adaptability in old age. We assume that the neuropsychological factor serves as a marker for successful adaptation to involutional processes that allows an elderly person to function at a high level, even in case of somatic health problems. Stern Research, 2009; Vance et al., 2012 show that successful adaptation is associated with a better use of compensatory

mechanisms of the neuronal substrate of the psyche and more developed neuroplasticity [1].

Materials and methods. The empirical research processes involved elderly people aged 60–74; 47 % were men and 53 %, women. The sample consisted of 94 people without a university degree. For our study, it was important that all its participants were members of clubs for the elderly and, therefore, were involved in some form of social activity.

The study used the following techniques:

1. Multilevel personality questionnaire "Adaptability" (MLO-AM) by AG Maklakov and SV Chermyanin;

2. Montreal Cognitive Assessment Scale (MoCa);

3. Comorbidity rating system CIRS-G (Cumulative Geriatrics Rating Scale);

4. A battery of neuropsychological tests (Balashova, Kovyazina, 2009)

Other methods include A. R. Luria's methods of memorizing 10 words, Schulte tables for assessing voluntary attention, and anticipation diagnostic technique. The latter method consists of a standardized set of 16 diagnostic cards depicting a situation, whose outcome must be predicted by the subjects (Rodionova, Abdulmanova, 2016).

Results. The sample comprises 3 groups: with a high or normal level of adaptation of 55 % (52 people), an average level of adaptation of 22 % (20 people) and a low level of adaptation of 24 % (22 people). All levels have their own vulnerabilities in the context of adaptation to new social positions.

Analysis of the data obtained by applying the Montreal scale for assessing cognitive functions showed that 70 % (66) of the subjects had normal cognitive functions. Subjects whose results do not correspond to the norm are 30 % (28).

Adaptation correlates positively with cognitive functions ($r = 0.429$, $p > 0.05$). The better is adaptation, the better is the cognitive ability.

Analyzing the correlations of adaptability with the help of higher mental functions, we found that adaptability is positively associated with semantic memory ($r = 0.252$, $p > 0.05$), and negatively associated with the time of solving prediction problems ($r = –0.169$, $p > 0, 05$).

No significant differences in the levels of adaptation between males and females were found, and the tendencies persist. These results are statistically confirmed by the Mann-Whitney test.

Adaptation correlates negatively with the level of comorbidity ($r = -0.271$, $p > 0.05$). The better a person adapts, the lower is the level of comorbidity. It was also revealed that the higher the cognitive abilities of a person, the lower the level of comorbidity ($r = -0.350$, $p > 0.05$).

Analysis of the data obtained using the CIRS-G comorbidity assessment system revealed that the minimum level of comorbidity or its absence is 7 %. The average level of comorbidity among elderly people is 18 %. 75 % of elderly people have diseases with a common pathogenetic mechanism, which determines a high level of comorbidity.

Conclusion. Older people whose cognitive abilities are normal had a high and moderate level of adaptation to involutionary processes. A high level of adaptability at an old age depends to a certain extent on the ability to remember and reproduce memories about the most important and significant events, phenomena, relationships of objects. It also depends on the neurodynamic component of the ability to predict, anticipate events and make appropriate decisions at a high speed. The better are a person's cognitive abilities, the lower is the level of comorbidity.

In the group of elderly people whose cognitive abilities do not correspond to the norm, the average level of adaptation prevails (22 %). The subjects have behavioural features that are partially compensated under usual conditions and can become more pronounced when changing activities. Therefore, the success of adaptation depends on the external environment. These individuals, as a rule, have low emotional stability.

In the group with low adaptation to involutional processes (24 %), we observed a decrease in cognitive functions. This group is characterized by low parameters of semantic memory and a low rate of anticipatory processes. Such people cannot make decisions quickly, poorly plan their activities and have difficulties making plans for the future. This may involve neuropsychic breakdowns, long-term functional disorders. People in this group have low neuropsychic stability, they are conflicted, can commit delinquent acts, often adhere to a lifestyle untypical of their age.

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