

NEUROPSYCHOLOGY OF COGNITIVE AGING

Summary

The increase of the proportion of elderly people in population has provoked growing interest for aging in scientific research. Two alternative approaches explaining the process of aging have been proposed. According to the first one, aging process is programmed and regulated by genes. The second approach suggests that aging is an effect of environmental insults to the organisms that induce progressive damage and, in consequence, death. Important age-related changes in human brain structure and function have been observed. The shrinkage of the brain is accompanied by an increase of white matter lesions frequency and changes in neurotransmission. In functional imaging studies the decrease of cerebral blood flow and metabolic rate has been reported as well as the reduction of hemispheric

asymmetry during cognitive tasks. Dramatical age-related changes have been also described in cognitive processes. The vision and hearing worsens and speech comprehension problems may appear. Major changes in attentional mechanisms have been observed. Fluid intelligence decreases, whereas crystallized abilities remain relatively intact. Several factors have been shown to influence the process of aging, among which sex, education and physical as well as intellectual activity through the life span have gained most attention. The age-related changes in cognition have been explained in terms of slowing of information processing speed, frontal lobe dysfunction, brain integrity or attentional and working memory deficits.