

The Investigation of Aging and Brain Damage on Cognitive-Communicative Mind Functions in Discourse Understanding: A Neurolinguistics Study

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Extended Abstract

Aim

The purpose of this research is to assess cognitive-communicative abilities in healthy young and elderly individuals, as well as patients with right hemisphere damage (RHD). Studies such as Wright (2016) have demonstrated a correlation between cognitive-communicative-linguistic function and aging. In fact, despite the numerous studies that have been conducted in different languages, including Farsi, on disorders caused by damage to the right hemisphere, further research in this field can clarify various aspects of the disorders of patients with right hemisphere damage and the role of the right hemisphere in language processing and cognitive-communication aspects. The novel aspect of the current study is that the performance of patients with right hemisphere damage will be compared with that of the elderly and young people to determine the extent to which aging affects the cognitive and communication functions of the elderly; and if aging has a negative effect on the cognitive and communication functions of the elderly, will there be a difference between the performance of patients with right hemisphere damage and the elderly?

Methodology

This quantitative research employed a casual-comparative approach to methodology. Participants included 18 RHDs aged 53 to 75 (7 females and 11 males) and 54 healthy individuals aged 30 to 45, 45 to 60, and 60 to 75 residing in Tehran in 2021 and evaluated in Persian. The subjects were selected using a method of convenience sampling. The Selective Attention Test (SAT), the Wechsler Memory Scale (WMS), the Proverb Comprehension Task (PCT), the Ironic Process Test (IPT), and the Semantic Judgment Test (SJT) are used as instruments.

Findings

In memory, selective attention, semantic judgment, proverb perception, and ironic perception tests ($P < 0.05$) the functional difference between RHDs and healthy individuals is statistically significant. Memory and selective attention evaluations reveal a statistically significant functional difference between the healthy 60-75-year-olds and the two healthy 30-45 and 45-60-year-old groups ($P < 0.05$). In the irony perception test, the functional difference between the healthy group aged 60-75 and the healthy group aged 45-30 is significant ($P < 0.05$). On the semantic judgment and proverb perception tests, there is no statistically significant difference ($P > 0.05$) between the 60-75-year-old healthy group and the 30-45 and 45-60-year-old healthy groups.

Conclusion

Cognitive resources hypothesis can explain the poor performance of RHDs compared to healthy people and the inferior performance of healthy elderly people compared to healthy younger people on communicative-cognitive tests. According to the results, it appears that patients with right brain injury have impaired communication-cognitive abilities compared to healthy individuals. Although some hypotheses, such as the coarse coding deficit hypothesis and the suppression deficit hypothesis, can provide mechanisms to justify the problems of patients with right brain hemisphere damage in lexical-semantic processing and virtual language understanding, it is not possible to justify other functional defects of these patients in the field of cognitive disorders, such as memory or attention, by relying on these hypotheses.

Keywords: Age, Cognitive-Communicative Functions, Cognitive Resources Hypothesis, Right Hemisphere Damage.