

## SUMMARY OF THE ISSUE

### *Theory and Philosophy of Psychology*

#### **T.V. Kornilova. Experimental Method as a Way towards Causal Explanation in Psychology**

Schools of academic psychology, however different, share one thing in common — the experimental paradigm. The researcher works with certain experimental models that exemplify his or her understanding of causal relationship in the psychological reality under investigation. The author analyses the basics of the experimental method and criticises its representation in both positivist and «descriptive» psychology, as well as its erroneous opposition to the humanity paradigm.

### *Theoretical and Empirical Research*

#### **O.N. Molchanova. Self-esteem: Stability or Mutability?**

The article discusses two aspects of the problem: first, from the point of view of the mechanisms for self-evaluation and protection of a certain level of self-esteem, and second, in the framework of the life span psychology. The author presents results of an original research of the factors influencing specific features of self-esteem: retrospective evaluation of parents' sensitivity, somatic status, age and social context. She analyses the ways the subject maintains his or her self-esteem at an acceptable level, which counteract the negative impact of some conditions (health and age status). She also discusses changes in young adults' self-evaluation for the last twenty years.

### *Special Theme of the Issue. Cognitive Science*

#### **V.M. Allakhverdov. The Awareness Process in the Context of Cognitive Science**

The author argues that cognitive sciences have lost its ideological unity and, because of it, have moved away from cognitivism. He also discusses psychological research of the mechanism for making decisions about awareness.

#### **N.N. Danilova. The Role of High-frequency Electrical Brain Activity in the Realization of Psychological Processes**

The article discusses the mechanism concerning generation of gamma-oscillations. Latest researches demonstrate that gamma-oscillations participate in the realization of different psychological processes, including enhancing attention and changing functional states, perception and working memory, processes of recognition and identification, awareness and semantic operations. The author discusses two hypotheses on the origin of gamma-rhythm: pacemaker and binding. To analyse the problem, the author suggests a special method based on the narrow frequency filtering the so-called evoked gamma-rhythm, localization of their dipole sources over the structural MRI data. The obtained results are compatible with the pacemaker hypothesis.

#### **F. Craik, E. Bialystok. Lifespan Cognition**

The development of cognitive abilities in children and the decline of

these abilities in older adulthood have both been studied extensively, yet these two aspects of cognitive science exist in relative isolation from each other. To some extent this situation of mutual neglect reflects the point that the subareas have emphasized different aspects of cognition, but it is clear that a unified theory of lifespan cognitive development must provide continuous mechanisms underlying growth and decline. In this article we suggest a framework based on the concepts of representation and control. Cognitive representations are laid down in the course of development and remain relatively stable throughout adulthood, whereas cognitive control rises steeply in children and declines in old age. Performance of tasks involving perception, attention, memory, thinking and language reflects the interaction of these two major aspects of the overall cognitive system. Future challenges include mapping these cognitive constructs onto the underlying neurobiology.

#### **I. Moen. Prosody and the Brain**

The article reviews studies, including lesion, dichotic-listening, and functional imaging studies, which have investigated hemispheric specialization of prosodic features, with particular emphasis on variations in pitch. The article also discusses to what extent these studies support current hypotheses concerning hemispheric specialization of prosody.

#### **V.G. Redko. What is the Natural Way towards Artificial Intelligence?**

The author discusses approaches in the theory of cognitive evolution and argues that this theoretical research could provide a scientific background for the future AI studies.

#### **K. Hugdahl. Auditory Laterality and Brain Function for Speech Sounds in a Dichotic Listening Paradigm**

The present paper presents an overview of the dichotic listening studies we have performed at our laboratory at the University of Bergen, Norway, during the last 20 years, with a focus on structural and functional asymmetry to simple speech sounds, like consonant-vowel syllables. The paper reviews both behavioral and functional neuroimaging data, showing that the right ear advantage in dichotic listening seems to correlate with increased neuronal activation in the upper posterior parts of the left temporal lobe, the planum temporale and adjacent auditory cortex areas. We have also used the dichotic listening method to study higher cognitive functions, like attention and executive functions, which shows a different neuronal localization, implicating prefrontal and parietal areas. The paper ends with a discussion of auditory hallucinations in schizophrenia as speech mis-perceptions, caused by neuronal pathology in the planum temporale area in the left temporal lobe

#### ***Work in Progress***

#### **T.N. Kotova. The Process of Identification of the Superfluous Condition in Sums by the Second-grade Schoolchildren**

The article presents a study of the second-grade schoolchildren learning how to solve mathematical problems with text instructions, the kind that they had not had the previous school year. The methodology included a comparison of arithmetical problems of various types (complex and indirect ones) with similar problems containing a

superfluous condition (the one that is not necessary for understanding the problem). In some cases the experimenter warned the children that the instruction contained a superfluous condition. The results show that the warning did not have any significant effect on identifying the superfluous condition. Learning to represent a mathematical problem, children learn how to interpret the answer before they can preserve the structure of the problem. They also learn to identify the superfluous condition before they know how to solve such kind of a problem. The study also shows connections between being able to identify the superfluous condition and to preserve the problem structure, on the one hand, and the interpretation of the answer, on the other hand.

**E.I. Nikolaeva. Comparative Analysis of Children's and Parents' Views about Family Patterns of Reward and Punishment**

The author compares reports from parents and children about the patterns

of reward and punishment accepted in their families, and about emotions that each of them experiences during the event. School children from the second, six and ninth grades, and their parents, participated in the study. The most significant result is the fact of mutual misunderstanding between parents and children. Parents construct it artificially when they teach children (unintentionally) to drop at a certain point their attempts at understanding the other person's emotional state. If younger children refuse to describe what their parents feel at the moment of punishment, adolescents refuse to describe their parents' feelings at the moment of reward. Children do not believe that, by punishing them, parents correct their conduct, they rather think that parents compensate for their own aggression. This fact speaks about the society rather than about the family: the kind of society we have requires its citizens to be confused about rather than to consciously understand relationships between personal rights and the social good.