Е. СЕРГИЕНКО. Раннее когнитивное развитие: новый взгляд, М., Институт психологии РАН, 2006, 464 с.

E. SERGIYENKO. *Early Cognitive Development: A New Outlook*, Moscow, Institute of Psychology, RAS, 2006, 464 pp.

Stressing the necessity of complementing and in a number of cases modifying the traditional outlook on the child as a natural creature, E. Sergiyenko asserts that infants are capable of anticipating events and representing objects and phenomena on the basis of the basic principles governing the organization of perceived information. She argues that anticipation is an immanent property of any form of psychic reflection and is manifested not only in the effects of spatial-temporal preemption of events but also in selectivity, directionality, goal determination and planning of actions.

Her conclusions are based on unique experimental material obtained in the process of studying how perception of movement develops, as well as a probe into infantile selectivity to static and dynamic information. She shows that infants aged as little as three weeks are capable of anticipatory tracking, while two- or three-month-olds can preempt an object's transference during its discrete movement. The general result of the first two chapters in her book is the conclusion about integrity and selectivity of the infantile perceptions of the world, as well as about the dynamics of psychic development that proceeds from general and nonspecific anticipation schemata to detailed, specific and simultaneously system-organized schemata.

There is a special focus on intersensory interaction and the role of eyesight in this process (Chapter 3). She quotes different points of view on the integration and differentiation of sensory modalities (Jean Piaget, Tim Bauer, James J. Gibson), analyzes the visual deprivation problem (David H. Hubel, Torsten N. Wiesel), discusses sensitive periods of the development of visual perception, presents experimental data on peculiarities of intersensory interaction in bilateral and unilateral cataract cases, and draws conclusions on the role of eyesight in intersensory interaction and infantile psychic development. The data she obtained on different types of visual-motor and perceptive activities, on general

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behavioral peculiarities in children with vision disorders, and on stereotypes and specifics of perception of human face are not only a substantial contribution to science but also induce a lively interest as well as a need to slowly ponder over what one has read.

The anticipating effects are markers signaling the presence in a child of inner images (representations) reflecting a picture of the world (Chapter 4). A supporter of the system evolutionary approach, Sergiyenko asserts that development and complication of cognitive representations is a continuous process, while the genesis of more complex psychic levels includes the basic primary stages of development. While considering executive actions in infants as an analogue of active action that is closely linked with perception, she observes that the "perception—action" model makes it possible to track selective and preemptive behavior in an infant, to wit, to identify some signs of representations and thereby reconstruct the two-component model as a three-component one, namely, "perception—action—representation" (Chapter 5).

As E. Sergiyenko relates James Gibson's invariant detection theory, she admits that perception and action are organized in one and the same units and obey the same principles of temporal dynamics. Perception and action are coordinated with the help of anticipation that reconstructs this system. It is for this reason that an action performed by a small child is directed and organized by perception which, in turn, has a mental basic foundation.

Based on the works of Tim Bauer, Elizabeth Spelke and Renee Baillargeon, E. Sergiyenko studies basic infantile representations. She comes to the conclusion that the infant possesses some inborn world representations that enable it to actively interact with its physical and social surroundings. She unveils results of some experiments confirming the presence in small children of representations about objects and causality of their movement.

Of special interest is her research into the development of unimanual and bimanual coordinations. She shows that some essential dynamics in the development of actions in infants is observed during the latter half of the first year, while an important turning point occurs between twelve and eighteen months of age. Complementing these data with results of a research into the pointing gesture and handedness confirms the correctness of her initial thesis on the close and reciprocal connection between perception and action.

Further on the book describes some subsequent steps in studying the growth of the infant's cognitive world during the first few months of its life and its cognition of the physical (Chapter 6) and mental (Chapter 7) reality. It is specifically stressed that the infant has inner resources right from birth, resources assisting its rapid development and adequate interaction with the world. Its unique ability to correctly use the *initial* (resources) for estimating the reality and anticipating the consequences of its own actions, for regulating its inner states and taking into consideration other people's mentality makes it possible to explicate the child's special and utterly complex world. The book reveals the basics of cognition of the physical world and emphasizes the role of two subsystems of representations: the "perception—action" system that handles the

spatial-temporal characteristics and the object identification system that performs categorization. It is shown that the child's initial representations are amodal, that is, they handle information on the typification principle. The unbreakable unity of perceptive and intellectual processes is confirmed by a large amount of literary and Sergiyenko's own experimental material that proves the hypothesis about the child being able, in the first six months of its life, to form prototypes and generalized representations.

Aside from the peculiarities of cognition of the physical world (continuity, extension, tempo, etc.), infant mentality is characterized by the ability to understand that other people are also bearers of the psychic and to differentiate its own states from those of the Other. The book discusses works of the last few years that were performed within the psychic model paradigm or Theory of Mind (Chapter 7). It shows that it is precisely the psychic model that is the psychological mechanism for child socialization and reflects a transition from the basic levels of the development of individuality to the level of a social interactions agent and to the level of a subject of social life (Chapter 8). The ability to understand oneself and other people enables the child to organize its behavior in a different way, to plan and forecast its consequences. Transiting from a single representation model to multi- and metamodels is accompanied by the expansion of the child's competence area, its skills in using knowledge to regulate its own states and control other people. It is shown that the understanding of deceit that is linked with a possibility of comparing one's own model of the psychic with the psychic of others, as well as the awareness of feelings in other people are criteria estimating child development level.

The book discusses subject criteria, analyzes the basic levels of subject formation, and studies the problem of behavior control formation as a method of subject attitude to the world. It shows a special contribution of genetic and medium components to the development of cognitive control in the period from birth to 30 months; reveals the heterochronicity of different components of behavioral regulation of monozygotic, dizygotic and single-born children; proves the role of parents in the development of behavioral control; and reveals a coordinated unity of all components of control in overcoming difficult life situations.

The last chapter relates some interesting and innovative views on how the genotype and the medium influence the child's cognitive development. It formulates the conclusion about the growing role of genetic factors in the development of the cognitive ability with age. Sergiyenko's own data on mental and psychomotor development are compared with data in other studies that confirm the hypothesis about a significant change in the child's psychic organization occurring between 18 and 24 months of age. New works showing a considerable contribution of the genotype to the development of the so-called higher or verbal abilities is demonstrative of the ambiguity of the conclusions about the role of the medium in the child's cognitive development. These results, as Sergiyenko aptly says, prepare the ground for a finer analysis of child psychic development in the early ontogenesis, orienting researchers to an objective and unbiased study of the basics of human cognitive development.

The book under review discovers some unfamiliar aspects of infant development. As one gets down to its perusal, one should be ready to perceive a logical, informative and serious text that is not adapted to the requirements of a broad readership. The latter trait is of particular importance because it makes one give thought to each assumption and fact, while avoiding the senseless "gobbling up" of extremely valuable scientific material. Sergiyenko debates with her Russian and foreign colleagues on the basis of her detailed knowledge of the positions of her potential opponents. The precision and clarity of her own scientific quest, her ability to organize joint investigations with colleagues in the laboratory she heads, her skill at consistently verifying every hypothesis that comes to be put forward, her talent as an interpreter, as well as her correct attitude to works of other scientists create an opportunity, as one is left alone with this valuable book, for pursuing an inner dialogue on different aspects of the problem she has formulated.

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