

Ivan Pavlov (1849–1936)

Pavlov was a physiologist, not a psychologist, who identified classical conditioning, a basic form of learning, due to his work on digestion. He first mentioned conditioned reflexes at an 1899 conference before the Society of Russian Doctors of St Petersburg (Hergenhahn, 2001). The work attained international recognition in 1904 at his Nobel Prize acceptance speech.

In his work, tubes were implanted in dogs' jowls and stomachs and the dogs salivated differently to different kinds of food. A problem arose. In time dogs were salivating before being given the food. The dog salivated at an attendant which suggested to Pavlov that a *signal* had formed—the attendant pointed to the possibility of food to come. This, at first, was considered an experimental error by Pavlov but he soon concluded that this anticipatory salivation was a phenomenon deserving of physiological study.

A few years later, in 1927, Pavlov would identify a difference between the animal and human types of nervous activity—the *first signaling system* (classical conditioning) and the *second signaling system* (verbal and symbolic stimuli) which was a special supplement to the human brain that was correlated with human thinking (Rahmani, 1973). In this, while certainly having offered an advancement and expansion on classical conditioning, Pavlov had failed to appreciate the social nature of human language and communication.

In social life the behavior of the individual is subordinated to the requirements of society by the actions of the social-others. Through the generation of complex signifying systems (systems that support communication) the connections formed in each individual's brain could be guided and regulated from without. The influence of speech upon another person thus fit into the pattern of the conditional reflex. Reflexologists had maintained this in conceiving of the word as a conditioned command, e.g., when a dog is commanded to sit and does so. Pavlov called speech the "second signaling system" and he conceived of it as the highest means of regulating human behavior (Luria, 1957). The capacity to understand speech is, as Vygotsky (1977) emphasized, more complex than the mere responding to a command, as with the dog, and to truly understand human speech one must attend to its active use (not mere responding to verbalizations). Human activity, moving beyond the forces of nature, took an active role in effecting mental processes. This was a new evolutionary process beyond natural selection—that of cultural evolution, and it was this that was responsible for higher mental activity.

It is not, of course, that biological evolution has come to a stop and that the species “man” is a stable, unchangeable, constant quantity, but rather that the basic laws and the essential factors which direct the process of biological evolution have receded to the background and have either completely fallen away or have become a reduced or sub-dominant part of new and more complex laws governing human social development. (Vygotsky, 1930/1994, p. 175)

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