Border Crossing
July - December 2024
Volume: 14, No: 2, pp. 183 – 195
ISSN: 2046-4436 (Print) | ISSN: 2046-4444 (Online)
bordercrossing.uk

TRANSNATIONAL PRESS® LONDON

Received: 30 November 2024 Accepted: 4 December 2024
DOI: https://doi.org/10.33182/bc.v14i2.2885

Ivan Mikhailovich Sechenov: A New Look at The History of Psychology

Tubanur İnanç Bozkurt[1] and Uğur Bozkurt[2]

Abstract

The history of psychology has been shaped by the emergence of different ideas to understand human behavior and mental processes. These ideas, which date back to antiquity, have played an essential role in developing psychology as a scientific discipline over time. One of the crucial figures who played a role in this process is undoubtedly Sechenov. Sechenov's endeavor to use methods similar to those of the natural sciences in psychology, as well as his work in this area, laid the foundations for the development of experimental psychology. He also drew attention to the importance of physiological processes in explaining mental actions and conducted various experiments. In addition, Sechenov's views paved the way for the development of behaviorism. This is because objective psychology had developed significantly in Russia before the emergence of behaviorism under the leadership of Sechenov. His ideas influenced the work of John B. Watson, Vladimir Mikhailovich Bekhterev, and Ivan Petrovich Pavlov. The fact that Sechenov was a pioneer in psychology and made influential contributions to many fields makes him an influential name in the history of psychology. Unfortunately, Sechenov is not well-known to the masses. Therefore, the primary purpose of this study is to introduce and explain Sechenov, his works, and his contributions.

Keywords: *Ivan Mikhailovich Sechenov; history of psychology; behaviorism; physiological psychology; experimental psychology*

Introduction

Sechenov is known to modern scientists not only as a skilled physiologist but also as a psychologist. Sechenov tried to explain many mental phenomena, including the seemingly complex thinking and language processes. During his psychological and physiological research, Sechenov argued that brain connections form an integrated system. He claimed it was impossible to deal with mental phenomena by attributing them only to the brain's activity, and separating them from the environment and other systems of the organism. He and also emphasized that the entire nervous system is involved in the formation of mental and psychophysiological phenomena and that this unity is because mental action is a process with a beginning and an end (Маклаков, 2016). Unlike many thinkers of the period, we will try to explain his life before moving on to the approaches he brought to psychology.

[1] Tubanur İnanç Bozkurt, Research Assistant, Van Yüzüncü Yıl University, Department of Psychology, Türkiye.
E-mail: tubanurinanc@gmail.com
[2] Uğur Bozkurt, Associate Professor, Van Yüzüncü Yıl University, Department of History, Türkiye.
E-mail: ugurbozkurt@yyu.edu.tr

Sechenov was born in 1829 in the village of Teply Stan, Simbirsk region. His father was a retired Major Mikhail Sechenov. After his father died in 1839, he later attended the Engineering School in Petersburg in 1843. In 1848, after graduating from the Engineering School as a Second Lieutenant, he was assigned to the II Reserve Engineer Battalion in the camps near Kyiv (Коштояници, 1945). Sechenov resigned from his post in 1850 and enrolled at the Moscow University Medical Faculty a year later. He lost his mother during his medical education, and after graduating from the Faculty of Medicine in 1856, he went abroad to study. Returning to Germany at the end of 1857, Sechenov studied the effect of alcohol poisoning on the human body (Сорокина, 2014). In Germany, at different times, he worked in the laboratories of Hermann von Helmholtz, Emil Heinrich du Bois-Reymond, Karl Friedrich, and Wilhelm Ludwig (Энциклопедия, 1955). In 1858, he examined the experiments of the famous French physiologist Claude Bernard on the effect of potassium cyanide on muscles and nerves. He published his first paper on the errors he detected. In 1859, he completed his studies abroad, and on his return to Petersburg in 1860, he defended his thesis 'Materials for the future physiology of alcohol intoxication.' He was subsequently appointed assistant professor in the Department of Physiology at the Academy of Medicine and Surgery. He was subsequently appointed assistant professor in the Department of Physiology at the Academy of Medicine and Surgery. He traveled to Paris between 1862 and 1863 to work with Claude Bernard for a year. When he returned to his homeland in 1863, he published his article *Reflexes of the Brain*. In 1866, his article *Reflexes of the Brain* was published as a separate book. Sechenov completed his work on the Physiology of the Nervous System. In 1870, he left the Academy of Medicine and Surgery and, in the same year, began working as a professor in the Department of Physiology at the University of Odessa. Thereafter, he concentrated on psychology, and Konstantin Dmitrievich Kavelin's book The Aims of Psychology (Задачи психологии), published in 1871, criticized the psychological principles put forward by Sechenov. In response, Sechenov published the article *Who and How Can Develop Psychology? (Как и кому развивать психологию?)* He also created a collection of his work, Psychological Studies. In 1876, he was appointed Professor at St. Petersburg University and in 1878, his book The Elements of Thought was published. In addition in 1884, his work Physiological Essays was published, and in 1888, Seçenov left the University of St. Petersburg (Коштояници, 1945). In 1889, he was elected one of the honorary presidents of the First International Congress of Psychology in Paris. He became a member of the Moscow Psychological Society, founded at Moscow University in the same year (Кольцова & Ждан, 2015). Sechenov began working at Moscow University in 1889, established the chair of physiology in 1891, and completed his work on the theory of solutions. In 1894, he moved to support student movements, subsequently resigning in 1901. From 1903 to 1904, he lectured on human anatomy and physiology in Prechitensky courses. He was elected an honorary member of the Academy of Sciences in 1904 and died in 1905 (Коштояници, 1945).

Sechenov has been studying psychology since his student years, and when he traveled abroad, he had unanswered questions about psychology (Сеченов,1907). Sechenov, who sought answers to these questions throughout his life, contributed to many subjects, primarily experimental psychology, physiological psychology, and behavioral approaches. In this respect, Sechenov's approaches to psychology will be discussed below.

Sechenov and Experimental Psychology

Experimental psychology started from experimental physiology in the first half of the 19th century. Developments in physiology affecting experimental psychology can be categorized under four headings. These are sensation, reflexes, nerve stimulation, and brain function (Boring 1957). Sechenov's influence on reflexes is evident. In the 19th century, names such as Johannes Müller, Hermann von Helmholtz, Pierre Flourens, Joseph Gall, Paul Broca, and Karl Wernicke contributed to the development of experimental psychology. A few essential names that contributed to that period will be discussed.

The 19th-century German physiologist Johannes Müller (1801-1858) was an influential scientist who supported the development of experimental physiology. Müller strongly advocated using experimental techniques in physiology (Schultz & Schultz, 2007). Müller, one of the teachers of Hermann von Helmholtz (1821-1894), proposed the theory called 'Specific Nerve Energies' to explain the idea that 'the same stimulus causes different sensations in each sense' (Benjafield, 2015). According to this point of view, what is critical is which sensory nerve is stimulated. The type of stimulus is not essential for the situations that determine the quality of sensation. Johannes Müller's defense of the experiment and the logical implications of the theory of Specific Nerve Energies, paved the way for experiments directly on the brain. Pierre Flourens (1794-1867) and Joseph Gall (1758-1828) also physiologists of the 19th century analyzed the brains of animals. Because he thought that the brains of animals such as dogs and pigeons were very similar to human brains, Joseph Gall removed certain regions of their animal brains and observed the behavioral effects. With this method, which he called Experimental Ablation, he defined the function of the missing part of the brain (Carlson, 2014). He concluded that the cerebellum is related to balance and motor coordination, and the cerebral hemispheres are related to perception. Joseph Gall, also thought that at least one part of the brain could take over the function of another part.

Paul Broca was skeptical of the idea that the brain acts as a whole. As a result of his observations, he was the first person to identify the part of the brain that caused a behavioral disorder (Hergenhahn, 2008), and work with people with brain damage. Broca worked with a patient who could not speak, but understood what was said to him, and an autopsy after the patient's death revealed severe damage to part of the left hemisphere of the brain. Since then, this region has been recognized as Broca's area. The corresponding disorder is Broca's aphasia. However, as Broca acknowledges, the priority of this work belongs to Ernest Auburtin (1825-93) and Jean-Baptiste Bouillaud (1796-1881). Karl Wernicke (1848-1905) worked with a group of patients who could speak but could not understand what was being said. Karl Wernicke analyzed ten cases and found that the Wernicke area in the left hemisphere was responsible for the symptoms. The disorder is known as Wernicke's Aphasia (Benjafield, 2015).

Apart from these people, Wilhelm Wundt (1832-1920), a contemporary of Sechenov, institutionalized psychology. Wund was a physiologist and aimed to apply physiological methods in psychology. Wundt was also an important figure in psychology. One of the reasons why Wundt is essential for psychology is that he founded the first psychological laboratory in Leipzig in 1879 and thus pioneered the establishment of modern psychology. The second is that his laboratory attracted the interest of young academics, who then developed what they had learned elsewhere, and contributed to the development of psychology. Before becoming a professor, Wundt studied, at different times, with Johannes

Müller (1801-1858) and Hermann von Helmholtz (1821-1894) (Freedheim & Weiner, 2003). Sechenov also worked in the laboratory of Hermann von Helmholtz.

Like his contemporary Wundt, Sechenov endeavored to develop psychology as a positive science. As a result of his activities, Sechenov became the founder of Russian scientific psychology, not so much institutionally, but in terms of ideas (Ждан, 2004). Until the second half of the 19th century, approaches to psychology in Russia were regarded as a part of theological study. Sechenov's *Reflexes of the Brain* argued against theological explanations. Sechenov had a significant influence on the formation of experimental psychology in Russia, and he believed that the subject of psychology can be traced through mental processes. The significance of Sechenov's ideas and work is that they influenced the research of Vladimir Mikhailovich Behterev and Ivan Petrovich Pavlov (Маклаков, 2016).

The 1960s was an essential stage in the development of psychology in Russia. During these years, discussions about the relationship between soul and body were prevalent in society (Grigoryan, 2004). Sechenov was open to these discussions, and his approaches to psychology are essential. Sechenov argued that mental life is subject to immutable laws and that psychology should align with these laws due to its basis in mental life. Claiming that psychology can be studied through specific laws, Sehenov stated that he endeavored to make psychology a positive science, like physics and chemistry. According to Sechenov, psychology would become a positive science when general principles of how to study and analyze a mental phenomenon were developed (Сеченов, 1873).

Sechenov emphasizes that it is necessary to follow the course of the mental development of human beings from the moment of their birth. This suggests that he introduced the idea of the genetic approach in psychology rather than the introspective method (Сеченов, 1873). In this respect, Sechenov noted that the innate individual characteristics of the human nervous system play an essential role in the entire subsequent development of the individual. It also emphasized the primacy of sociocultural influences on human behavior (Grigoryan, 2004). In addition, in 1891, Sechenov wrote an essential work on experimental psychology. The book Physiology of Nerve Centres (Физиология нервных центров), in which various types of nervous activity are described, starting with reflexes and ending with mental reactions (Циммерман & Сеченов, 2018).

According to Sechenov, the study of mental activity is, first and foremost, a problem of the mind-body relationship; naturally, both physiologists and psychologists should work in this field simultaneously. Sechenov undertook to establish a scientific system of psychology without familiarizing himself with the entire psychological literature. At the same time, Sechenov aimed to show psychologists the possibility of applying physiological knowledge to the phenomena of mental life. Therefore, Sechenov decided to write everything about mental phenomena without prior learning, knowing only the laws of neural activity, and to emphasize that studying mental activity is mainly the task of the experimental physiologist (Grigoryan, 2004). For this reason, the contribution of Sechenov's studies on physiology to psychology will be explained below.

Sechenov and Physiological Psychology

Physiological psychology, also known as biological psychology or psychobiology, is a sub-branch of psychology. This field tries to understand the relationship between mind and body and how they interact (Hayward, 1997). In other words, it attempts to explain how various biological systems relate to mental functions, behavior, emotion, and cognition. Examining the fundamental biological mechanisms that shape human behavior provides in-depth information for understanding the human experience (Bozdemir, 2024). In this context, Sechenov's studies in the field of physiological psychology will be discussed. However, before moving on to this issue, it is helpful to look at the course of studies on the physiological basis of psychological processes in historical context.

Studies on the multifaceted relationship network revealed by the brain-body-behavior triad date back to ancient times. Indeed, in many ancient cultures, including the Egyptians, Indians, and Chinese, people recognized the heart as the center of thought and emotion. The ancient Greeks held a similar belief, but Hippocrates (5th century BC) argued that this function should occur in the brain (Carlson, 2014). After Hippocrates, many thinkers such as Plato, Aristotle, Cicero, and Galenos contributed to biologically based explanations (Öztürk & Uluşahin, 2018). These views can be seen as pioneering evaluations of physiologically-based explanations of psychological processes. In addition, Rene Descartes, the father of modern philosophy, argued, that man was a machine, in parallel with the dominant thought of the 17th century. Indeed, Descartes' mechanistic view of the human body paved the way for physiologically based explanations of psychological processes. Descartes realized that human actions were often automatic responses and thought they were controlled by external stimuli or mechanical laws of nature.

On the other hand, he favored the idea of free will and conscious control. He thus defended a dualistic view of human behavior. According to this view, known as Cartesian Dualism, which helped lay the foundations of modern science, there are two types of human behavior: involuntary and voluntary. Involuntary behavior consists of automatic responses to external stimuli, called reflexive behavior. Reflexive behavior occurs when sensory messages from the sensory organs travel to the brain and motor messages return from the brain to the muscles along defined neural pathways. At the same time, Descartes thought that reflexive movements were innate and fixed by the anatomy of the nervous system (Domjan, 2003).

The study of reflexes has a long history in physiology. The Bell-Magendie Law distinguished between sensory and motor nerves at the spinal cord level. This distinction laid the groundwork for the understanding of reflex action. The discovery stimulated research on the nature and speed of transmission of nerve impulses, which led to the study of reaction time by Johannes Müller and Hermann von Helmholtz (Freedheim & Weiner, 2003). Reflexes were initially considered mechanisms of interaction of different systems within an organism to produce biologically appropriate responses to specific influences, and were usually associated with the spinal cord. Later, it was realized that the brain was involved in forming reflexes and that mental activity was directly related to its functioning. In this case, however, some questions arose: Is the soul involved in the organization of the organism? If so, what is its role? How do the mental phenomena inherent in the brain relate to the problem of organism regulation? The answer to these and many other questions was given by Sechenov, who began to see the reflex as a more general phenomenon (Маклаков, 2016).

Before Sechenov, physiologists who tried to explain human activity within a reflex theory framework had problems explaining two phenomena. First, some human actions are spontaneous, not conditioned by external influence. The second was that overt influences on a person do not lead to a reaction, i.e., the reflex that has begun is not complete. Sechenov showed that so-called spontaneous human actions could be caused by signals from inside the human organism that are not visible from the outside, and he called this condition 'dark sensations.' Secondly, in an experiment with a salt crystal implanted in the brain of a frog, Sechenov discovered the phenomenon of 'central inhibition', thus proving that an initiated reflex can be inhibited (Ноздрачев & Щербатых, 2021).

Sechenov's discovery of inhibitory mechanisms in the brain led him to conclude that psychology could be studied in terms of physiology. In 1845, Eduard Weber (brother of Ernst Weber of Weber's law fame) discovered that when he stimulated a frog's vagus nerve (an important nerve connecting the brain to various internal organs), the frog's heart beat more slowly. This was the first observation that increased activity (stimulation) of one part of the neuromuscular system causes a decrease in another. Weber found that stimulating the vagus nerve inhibits heart rate. He also observed that spinal reflexes were generally slower in animals with intact cerebral cortices than in animals whose cortices had been cut. Weber thought that one of the cortical functions might have inhibited reflexive behavior. Weber's observations and insights offer a possible explanation for why automatic behavior is usually under our voluntary control. However, no one other than Secyet noticed this perspective. Sechenov also discovered that in inhibition, an explanation for smooth and coordinated movement could be provided without using subjective, metaphysical concepts such as mind or soul (Hergenhahn, 2008).

Sechenov's work, including his theory of central inhibition, fundamental research in neurophysiology and blood physicochemistry, psychophysiological investigations, and his concept of the sociocultural determination of behavior have continued to influence the development of physiology, psychology, medicine, and epistemology. At the same time, his proposed interdisciplinary research approach has found a wide response in modern science. Sechenov's discovery of central inhibition in 1862 was an essential achievement in neurophysiology. Sechenov not only expanded knowledge about the function of the nervous system but also shed new light on the regulation of the life activities of organisms (Grigoriev & Grigorian, 2007).

Sechenov's discovery of mechanisms that suppress reflexes was significant. He did this experiment as follows: He opened the frog's brain and the upper part of the opi; then made transverse incisions in the brain in the optic tubercles area. Sechenov suspended the frog, cut in this way, from its chin and immersed its hind legs in a sulfuric acid solution, watching the time until the frog removed its legs from the solution with the help of a clock or a metronome. With this simple method, which is still used today, Sechenov determined the speed of the reflex response to stimuli. After repeatedly performing this experiment, he drew attention to an interesting phenomenon. When a crystal of table salt was used to irritate the brain of a frog in the area where the optic tubercles were cut, the retraction, i.e., the time required for the reflex to appear, increased markedly (Коштоянци, 1945). The center discovered by Sechenov was named the 'Sechenov Center' (Kanunikov, 2004). The phenomenon of central inhibition was named 'Sechenov inhibition.' The hypothesis about the inhibitory effect of one part of

the nervous system on another was proven. Today, Sechenov's experiment is used as laboratory work in regular physiology courses (Мазилов, 2017)

Sechenov argued that the cause of mental or psychological phenomena is the environment; external sensory stimulation produces all conscious and unconscious actions through the brain's total excitatory and inhibitory activities. He argued that a psychology based on people's introspection reports is too complex and 'too subject to the deceptive suggestions of the voice of our consciousness .'According to Sechenov, 'Only physiology can hold the key to the scientific analysis of psychological phenomena' (Freedheim & Weiner, 2003).

Sechenov published his previous work and findings in his book *Reflexes of the Brain*. Before a St. Petersburg censor changed the title, the book was called An Attempt to Give Physiological Foundations to Mental Processes (Hergenhahn, 2008). In this book, Sechenov proved that many mental events in human life become understandable within the framework of the reflex theory without using the concept of an immaterial soul (Мазилов, 2017). He also states in the book that the brain's functioning can ultimately be expressed as an act of muscular movement. He tried to explain this thought with the following statements: 'Whether a child laughs at the sight of a toy, whether Garibaldi smiles when he is persecuted for his excessive love of his country, whether a girl trembles at the first thought of love, whether Newton creates the laws of the world and puts them on paper, the ultimate reality is muscle movement' (Коштоянц, 1942).

Thanks to Sechenov's conclusions, many aspects of the interaction between physiological processes and mental phenomena became understandable, giving hope in solving the mind-body problem. Sechenov points out that some spontaneous human actions, which Descartes had previously referred to as 'free will,' are, in fact, reflex movements that occur automatically and unconsciously, outside of consciousness and will, and that these reflexes originate not only from the outside world but also from within the organism (Щербатых, 2020). In short, Sechenov shows that some of the actions that Descartes tries to explain as free will are the product of physiological and automatic processes. According to Sechenov, the entire content of scientific psychology can be nothing but a set of doctrines concerning the origin of mental acts (Сеченов, 1873).

Ivan Pavlov claimed that Sechenov was the first to begin the scientific study of mental phenomena (Коштоянц, 1942). Pavlov could exemplify Sechenov's theoretical claims. This can be illustrated by Pavlov's experiment on digestive physiology, which won him the Nobel Prize. To describe the response of the salivary glands to the sight of food, researchers used mental terms such as 'judged,' 'selected,' and 'sorted' to interpret the dogs' responses. Pavlov's work was based on Sechenov's first experiments on inhibiting spinal reflexes. Accordingly, these studies have focused on the generation, conditioning, and elimination, extinction, of reflexes to various stimuli and the control of these reflexes by excitatory and inhibitory effects in the brain (Freedheim & Weiner, 2003). As can be understood from the previous statements, many scientists, such as Pavlov, conducted important experiments and contributed to the development of psychology thanks to the findings identified by Sechenov.

Sechenov and Behaviourism

John B. Watson is regarded as one of the pioneers of the behaviorist approach. Undoubtedly, Watson put forward many new views and made essential contributions to the development of behaviorism. However, Sechenov also had critical studies on behaviorism and put forward ideas in this field years before Watson. Before moving on to Sechenov's ideas on behaviorism, it is helpful to look at the work of Watson, the founder of the behaviorism school, and the extent to which he was influenced by Russian psychology.

When Watson discovered Russian objective psychology, he received support from its proponents. However, he came to his current situation by charting his course with his research and thoughts. What Watson and the Russian psychologists had in common was a complete rejection of introspection and any explanation of behavior based on mentalism. They both thought that consciousness could not cause behavior but was only a phenomenon or an epiphenomenon accompanying certain physiological reactions caused by stimuli. Many Russian physiologists, such as Sechenov and Pavlov, were more interested than Watson in explaining the underlying physiology of behavior, especially the physiology of the brain. As time passed, Watson became less interested in physiology and more interested in relating stimuli to responses. He called the brain a "mystery box" used to explain behavior when its actual cause is unknown. In other words, Watson's approach to studying organisms (including humans) was closer to that of Bekhterev than that of Sechenov or Pavlov. In other words, Bekhterev and Watson's approaches were very close, methodologically and philosophically. In his 1913 statement on behaviorism, Watson did not mention the work of the Russians and said very little about human behavior. Although Watson's first book (1914) dealt mainly with animal behavior, he found it necessary to mention the Russian physiologists. Finally, in his presidential address to the APA in 1915 (published in 1916 as 'The Place of the Conditioned Reflex in Psychology'), Watson suggested that Pavlov's work on the conditioned reflex could be used to explain human and animal behavior. However, Watson only partially accepted Pavlov's concepts in his work (Hergenhahn, 2008).

Because Watson believed objective knowledge of subjective phenomena, was impossible, he developed an overly simplistic behavioral model, leaving the components of the mind outside this model's scientific study. Chronologically before behaviorism and in contrast to it, Sechenov created a fundamentally different concept of behavior as objective psychology. This concept entered science, under the reflex theory of the soul. According to this theory, 'scientific psychology in all its content could be nothing but a set of doctrines concerning the origin of mental activities' (Кольцова & Ждан, 2015).

Sechenov believed that the cause of all intellectual and motor activities was external stimulation. Thus, according to Sechenov, the entire behavioral repertoire was the result of responses to environmental stimuli mediated at the cortical level. In addition, Sechenov rejected contemporary views of psychology as a collection of redundant concepts reflecting the current state of ignorance of physiology. Sechenov argued that with further research, their psychological nature would be reduced to appropriate levels of physiological explanation. Furthermore, Sechenov reduced mental and physiological reactions to reflexes, such that ideas became associations of reflexes, mediated by the central nervous system. Thus, the founder of modern Russian physiology described reflexology as a monistic interpretation of human activity that equates psychological processes with basic neural processes (Brennan, 2014).

According to Sechenov, both overt and covert behavior (mental processes) are reflexive because both are triggered by external stimulation. Moreover, both are caused by physiological processes in the brain (Hergenhahn, 2008). Therefore, Sechenov uses the concept of reflex to explain all behavior and considers psychological processes as reflexes. This approach expresses that psychological and physiological processes are interconnected (Kanunikov, 2004). In addition, Sechenov tried to explain all mental phenomena based on associationism and materialism. Thus, the influence of the positivist understanding of the Berlin physiologists was revealed. Sechenov vehemently denied that thoughts cause behavior and emphasized that external stimulation causes all behavior (Hergenhahn, 2008). Moreover, Sechenov believed that mental phenomena are part of any behavioral action and are themselves a kind of complex reflex, i.e., physiological phenomena (Маклаков, 2016).

Using frogs as subjects, Sechenov found that by placing salt crystals in some brain regions, as previously stated, he could prevent the reflexive withdrawal of a leg from the acid solution. The reflex returned in full force when the salt was washed off with water. Sechenov's observation solved a problem with limited attempts to explain behavior in terms of reflexes: Why is there often a discrepancy between the intensity of a stimulus and that of the response it elicits? For example, it was observed that a very low-intensity stimulus could produce a very intense response, and a very intense stimulus could produce only a mild response. Sechenov's answer to these questions was that sometimes a response was wholly or partially blocked. According to Sechenov, removing this major obstacle would make it possible to explain all behavior, including human behavior, as reflexive. Sechenov also saw human development as the gradual establishment of inhibitory control over reflexive behavior. According to Sechenov, such control allows for thoughtful action or inaction and for silently enduring the aversive experience. In short, Sechenov hypothesized that there may be a mechanism by which previous experiences can influence current experiences and behaviors (Hergenhahn, 2008).

Sechenov's Studies on Psychology

Sechenov's contributions to the field of psychology are paramount among Sechenov's scientific activities throughout his life. Sechenov's studies in the field of psychology, the fundamental problems he analyzed, and his approach to these problems are valuable for understanding the history of psychology. Therefore, it will be helpful to introduce Sechenov's work in psychology in general terms.

The study titled *"Reflexes of the Brain" (Рефлексы головного мозга)* was initially published as an article in the journal Meditsinski Vestnik. Later, in 1866, it was published as a book in St. Petersburg (Марков, 2020). This book consists of two parts, the first of which analyses the origin mechanism of involuntary movements, and the second analyses the same in terms of voluntary movements. Based on the analysis of a series of muscle movements, Sechenov concludes that 'all involuntary movements are machine-like in origin,' i.e., based on a reflex mechanism. In the first part of his work, Sechenov uses numerous experimental data on the physiology of the nervous system, incorporating his own contributions. In contrast, in the second part, where he discusses voluntary movements, he omits physiological aspects. Nevertheless, the second part has a 'relatively solid foundation' (Grigoryan, 2004). K. D. Kavelin published The Tasks of Psychology in 1871 (Сеченов, 1952). Using statements in direct opposition to the psychological principles set out by Sechenov in Reflexes of the Brain.

In response, in 1872, Sechenov published an article in Vestnik Evropy titled Commentary on Mr. Kavelin's book 'The Tasks of Psychology' in which he addressed the modern physiological-psychological school's views on the traditional statements of K. D. Kavelin (Сеченов, 1872). In response, in 1872 Sechenov published in Vestnik Evropy an article *Commentary on Mr Kavelin's book "The Tasks of Psychology" (Замечания на книгу г. Кавелина "Задачи психологии")*, in which he explained the modern physiological-psychological school about the traditional statements of K. D. Kavelin (Сеченов, 1872). In 1873, Sechenov published an article entitled "To Whom and How to Develop Psychology" (Кому и как разрабатывать психологию) in Vestnik Evropy as an extension of the discussions he had initiated against K. D. Kavelin. In this lengthy article, Sechenov describes how psychology was analyzed and became a positive science (Сеченов, 1873). In 1877, Sechenov published his speeches on thought from his public lectures. Sechenov's work "On the Elements of Visual Thinking" (Об элементах зрительного мышления) formed the basis for his article Elements of Thought, which was published a year later (Марков, 2020). The article "*Elements of Thought" (Элементы мысли)*, published in Vestnik Evropy in 1878, is one of Seçenov's essential publications. Concrete thinking provides information on many issues, such as distinguishing and recognizing external objects, and identifying and separating parts, properties, and states from the object as a whole (Сеченов, 1878). In 1881, Sechenov published the article "*The Doctrine of Freedom of Will from a Practical Point of View" (Учение о несвободе воли с практической стороны)* in Vestnik Evropy. This article presents the closeness of psychological topics to private life, the inadequacy of psychological education, and the approaches to the theoretical development of psychological activities. At the same time, he emphasizes the elements that should be taken into account in human relations, and he advises paying attention to understanding his explanations on psychological issues (Сеченов, 1881). In his "Impressions and Reality" (Впечатления и действительность), published in Vestnik Evropy in 1890, Sechenov attempts to explain whether the objects and phenomena of the external world bear any resemblance in themselves to the impressions that human consciousness receives from them, (Сеченов, 1890). In the article "Subjective Thought and Reality" (Предметная мысль и действительность), published in Moscow in 1892 (Марков, 2020), Sechenov addresses the question of whether and what kind of similarity our impressions of the external world bear to reality; he tries to show that such similarity can be proved only for some aspects of visual and tactile impressions, i.e., straight lines, the distribution and movement of objects in space (Сеченов, 1952). "*On Object Thought from a Physiological Point of View" (О предметном мышлении с физиологической точки зрения)*, the text of Sechenov's speech delivered at the IX Russian Congress of Natural Scientists and Physicians on 4 January 1984 (Марков, 2020) emphasized that Sechenov, who was the first speaker at the congress, would talk about the problem of thinking and that this was also a subject of psychology (Сеченов, 1952).

Conclusion

The 19th century stands out as a period in which essential developments that form the basis of physiological psychology were experienced, and significant scientific progress was made. During this period, studies on the biological foundations of psychology gained momentum, and critical studies on the functioning of the brain and nervous system were carried out. In other words, the idea that the mechanisms of the brain and the nervous system are the basis of mental actions has been developed, and much research has been carried out in this framework.

One of the essential figures of the 19th century was Ivan Mikhailovich Sechenov. Sechenov, who saw observable behaviors and mental processes arising from the physiological functioning of the brain as reflexes initiated by external stimuli, is known as the founder of Russian physiological psychology. Sechenov, like his contemporary Wilhelm Wundt, attempted to analyze mental acts by experimental methods. It is understood that Sechenov was at least as crucial as Wundt in making psychology a positive science. However, due to his inability to institutionalize it, his views were implemented by later scientists. Sechenov had an essential influence on the foundation of experimental psychology, especially in Russia. Onun ortaya koyduğu görüşler ve yaptığı çalışmalar, Vladimir Mikhailovich Bekhterev ve İvan Pavlov'un araştırmalarını derinden etkilemiştir. Sechenov's first experiments on the inhibition of spinal reflexes were a source of inspiration, especially for the work in Pavlov's laboratories. These studies have focused on the generation (conditioning) and elimination (extinction) of reflexes to different stimuli. He also analyzed how excitatory and suppressive mechanisms in the brain control these reflexes. However, it is also essential to consider Sechenov's influences on objective psychology. Sechenov excluded all kinds of behavior based on introspection and mental processes from psychology years before John B. Watson did. However, Sechenov made efforts to delve into the physiology of the brain, which he saw as the root cause of behavior. Watson was influenced to a certain extent by Sechenov's views. However, over time, Watson developed new views by following his independent path.

In this context, it is seen that Sechenov tries to reduce human behavior to physiological processes. According to Sechenov, the source of psychological processes is environmental stimuli. Sensory information from the outside world produces all actions-whether conscious or unconscious—that result from excitatory and inhibitory activities in the brain. Sechenov, who also claimed that physiological processes could shape behaviors, made statements about behaviorism years before John B. Watson, who is considered the founder of behaviorism. The extent to which Sechenov influenced Watson is debatable, but Watson's approaches to behaviorism nearly fifty years ago were considered necessary for psychology. He also laid the foundations of neuropsychology by introducing the theory of central inhibition in 1862. He provided the basis for neurological studies, by stating that all life actions are reflexes by origin. As can be seen, Sechenov has made new approaches and discoveries in many areas of psychology. Sechenov sought to treat psychology as a positive science like the natural sciences. The limited opportunities of the environment in which he lived and the theological approaches in Russia caused his works and discoveries to remain ideas. However, he wrote down his approaches to psychology and trained many students contributed significantly to the establishment and development of psychology as an institutional discipline.

References

Benjafield, J. G. (2015). *A History of Psychology*. Fourth Edition, England: Oxford University Press.

Большая Советская Энциклопедия: В 50 томах (1955). И. М. Сеченов. (XXXVIII, сс. 623-626). Москва: Советская энциклопедия, 1950-1957, 2-е издание.

Boring, E. G. (1957). *A History of Experimental Psychology*. Second Edition, New Jersey: Prentıce-Hall.

Bozdemir, B. S. (2024). *Fizyolojik Psikoloji*. Ankara: MedyaPress Türkiye Bilgi Ofisi Yayınları.

Brennan, J. F. (2014). *History and Systems of Psychology*. Sixth Edition, Boston: Pearson.

Carlson, N. R., (2014). *Foundations of Behavioral Neuroscience*. Ninth Edition, Boston: Pearson.

Domjan, M. (2003). *The Principles of Learning and Behavior*. Fifth Edition, California: Wadsworth.

Hayward, S. (1997). *Biopsychology*. London/England: Macmillian.

Hergenhahn, B. R. (2008). *An Introduction to the History of Psychology*. California: Wadsworth.

Freedheim, D. K. ve Weiner, I. B. (2003). *Handbook of Psychology: Volume 1, History of Psychology*. New Jersey: John Wiley & Sons, Inc.

Григорьян, N. (Nora) A. (2004). *Иван Михайлович Сеченов 1829-1905*. Москва: Наука.

Grigoriev A.I. & Grigorian N.A. (2007). I.M. Sechenov: The Patriarch of Russian Physiology. *Journal of the History of Neurosciences: Basic and Clinical Perspectives*, 16:1-2, 19-29, DOI: 10.1080/09647040600653121.

Ждан, А. Н. (2004). *История психологии, От Античности до наших дней*. Москва: Академический проект.

Kanunikov, I. E. (2004). Ivan Mikhailovich Sechenov the Outstanding Russian Neurophysiologist and Psychophysiologist. *Journal of Evolutionary Biochemistry and Physiology*, Vol. 40, No. 5, 596-602.

Кольцова, В. А., Ждан, А. Н. (2015). Учение И.М. Сеченова о рефлексах головного мозга: манифест русской объективной психологии. *Психологический журнал*, том 36, №2, 70-77. (Article in russian).

Коштоянц, Х. С. (1942). *Сеченов-основоположник научного изучения психических явлений, Сеченов И. М. Рефлексы головного мозга*. Москва: Изд-во АН СССР.

Коштоянц, Х. С. (1945). *И. М. Сеченов-великий русские люди*, Москва: Молодая Гвардия.

Коштоянц, Х.С. (1952). *Избранные произведения*, *Сеченов И. М.* Том Первый, Физиология и Психология, Москва: Издательство Академии Наук. СССР.

Маклаков, А. Г. (2016). *Общая Психология*, Учебник для вузов, Санкт-Петербург: Питер.

Марков, А. Г. (2020). Направления научных исследований И.М. Сеченова: количественный анализ частоты встречаемости терминов в заглавии статей, Э.И. Колчинский (E.d.) *Историко-Биологические Исследования* içinde (85-94). Санкт-Петербург: Российской академии наук.

Мазилов, В. А. (2017). История психологии: проблема факта. *Ярославский педагогический вестник*, № 3, 151-158. (Article in russian).

Ноздрачев, А. Д. & Щербатых, Ю. В. (2021). Физиология и психология-диалектика взаимодействия при решении психофизиологической проблемы. *Российский физиологический журнал им. И. М. Сеченова*, Том 107, № 2, 154-176. (Article in russian).

Öztürk, O. & Uluşahin, A. (2018). *Ruh Sağlığı ve Bozuklukları*, 15.Baskı, Ankara: BAYT Yayınları.

Schultz D. P. & Schultz S. E. (2007). *Modern Psikoloji Tarihi*. 8. Baskı, Türkçesi: Yasmin Aslay, İstanbul: Kaknüs Yayınları.

Сеченов, И. М. (1863). Рефлексы головного мозга. *Медицинский вестник*, № 47, 461-484; № 48, 493-512. (Article in russian).

Сеченов И. М. (1872). Замечания на книгу г. Кавелина "Задачи психологии". *Вестник Европы*, Восмой год, Том VI, Ноябрь, 386-420. (Article in russian).

Сеченов, И. М. (1873). Кому и как разрабатывать психологию. *Вестник Европы*, Восмой год, Том II, 548-628. (Article in russian).

Сеченов И. М. (1878). Элементы мысли. *Вестник Европы*, Тринадцатый год, Том II, 457-533. (Article in russian).

Сеченов И. М. (1881). Учение о несвободе воли с практической стороны, *Вестник Европы*, Шестнадцатый год, Том I, января, 78-95. (Article in russian).

Сеченов И. М. (1890). Впечатления и действительность. *Вестник Европы*, Двадцать пять год, Книга V, Май, 157-172. (Article in russian).

Сеченов И.М. (1907). *Автобиографические записки Ивана Михайловича Сеченова*. Москва: Научного слова.

Сорокина, Т. С. (2014). Иван Михайлович Сеченов в истории российской и мировой физиологии. *Вестник Российского университета дружбы народов*, Серия: Медицина, № 3, 102-112. (Article in russian).

Щербатых, Ю. В. (2020). Что есть психика? история и перспективы решения психофизической проблемы, *Вестник по педагогике и психологии Южной Сибири*, № 3, 105-132. (Article in russian).

Циммерман, Я. С. (2018). Иван Михайлович Сеченов-великий русский физиолог: жизненный путь и научные достижения, *Экспериментальная и клиническая гастроэнтерология*, выпуск 159, № 11, 99-102. (Article in russian).