

Research Article

An essay on the background of experimental psychology and behaviourism

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Abstract

Although ideas on human being's soul, sense, and mind could come back to Ancient Times in Philosophy, the foundation of 'psychology' in modern meaning began in the 19th century through the research of Wilhelm Wundt. Modern psychology founded by Wundt's experimental studies based on experiment and observation. This essay started with a comprehensive debate on how philosophical ideas formed the modern notions and techniques in psychology. Then, it discussed some effective approaches in modern psychology before the foundation of experimental psychology and behaviourism. In the context of this study, the primary method based on a qualitative debate. A theoretical discussion and explanation way used to reveal the thematic ideas of the study. The primary motivation is to fill the literature gap, which covers the founder theoretical approaches on 'psychology', 'experimental psychology' and 'behaviourism'. The essay answered the question on how the modern psychological movements positioned to define 'behaviourism'; this has been the most significant contribution of the study to the body of knowledge.

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Introduction

Experimental psychology is based on 'positivism' and promotes experimental methods to search human personalities, minds, and life experiences. Before the modern notions of 'experimental psychology', some psychoanalysts have already examined the effects of human behaviour patterns on psychological illnesses. However, the mental processes of the human mind -which closely relate to human behaviour-, were not defined in the field of psychology before modern experimental studies. New attitudes on 'how the way human behave' diversified because of the contributions of the movements in 'experimental psychology'. Some theories based on perception, empirical approaches on the human mind created the core of experimental studies on behaviour settings of people. 'Behaviourism' ideas began to be shaped to reveal how human behaviours are shaped throughout life. This study examines where the 'experimental psychological approaches' came and how 'behaviourism' ideas generated in modern psychology. The differences between pre-modern and modern era' psychological attitudes showed us how experimental studies approached the way the human mind and behaviours.

The Foundation of the 'Psychology'

Before Modern

In ancient times, pre-Socratic philosophers like Thales, Democritus, Pythagoras tried to relate the sources of ideas with observable facts and defined explanations directed towards understanding observations. In Ancient Times, except for Archimedes, there was no importance to the experiment. The main thing was observation and making judgements on them (Rieber, 2013). This approach afterwards affected naturalist attitudes in Psychology. After pre-Socratics, Plato divided reality into two categories: Perceivable and conceivable. He claimed perception is illusory and modern psychologists use his ideas for describing the nature of perception as the defective images of objects. Plato also emphasised the dichotomy of the eternal soul and ephemeral body. His successor Aristotle tried to collapse the dichotomy between body and soul, and he tried to examine their functions and relations instead of their

description like Plato had examined. Thanks to Aristotle's research, behaviour gained importance since behaviour seemed like the output of body-soul relations. His attitudes could be defined like a functionalist psychological approach. He also tried to examine mechanisms of perception, reminiscence, mind, desire and reaction, cognition, common sense etc. (Barnes, 2015).

In Medieval Times and Renaissance, the influences of Plato and Aristotle continued. In the early Medieval Ages, Neo-Platonism and Patristic Philosophy were the significant movements. Their members tried to examine Plato's ideas about the eternal soul and ephemeral body ideas in more mystical and religious ways. Plotinus, one of Neo-Platonism's most influential philosophers, constructed the notion of the spaceless and timeless 'absolute soul' separated from the body, which was the other souls' origin (Hackett, 1992). This idea affected the formation of the term 'mind' in scientific psychology. His ideas affected the first Patristic Philosophers. St Augustine constructed the term 'active intelligence', which is the manifestation of God and the sources of all mental processes. As a result of this, mental interactions became to be considered the interaction between God and humankind. After Plato centred Patristic Philosophy, Averroes (Ībn-i Rūṣd) developed Aristotle's Psychology and influenced Scholastic Philosophy (Al, 2014). After him, St Thomas tried to form Aristotle's Psychology as the central ideology of church institutions. St Thomas, unlike his predecessors, re-defined 'active intelligence' as the soul and constructed a new definition of 'mankind'. Differently from Aristotle's definitions about body-soul relationships mechanically, St Thomas tried to define this dichotomy under the perspective of theology, and his definition of soul stayed unclear. He focussed on the unity of soul and body, branches of soul, free will and passive & active cognition etc. Medieval ideas continued in Renaissance (Copleston, 2003).

In the 17th and 18th centuries, thanks to intensive discussions about human knowledge sources between rationalists and empiricist philosophers, modern psychological issues began to emerge gradually. Rationalist Philosopher Rene Descartes built his existence on his cognition. He claimed that we could not rely on senses. Descartes also tried to solve dichotomy between body and soul. He mechanically examined this issue. According to him, the body was the mechanical object, and non-mechanical essence affects this mechanism. He followed Plato and St Thomas's ideas on the soul, but he did not explicitly use the term 'soul'. Instead, he constructed body-mind relations under the perspective of the term 'interaction'. He also examined freewill, determinism and branches of mind etc. (Wilson, 2016).

The other rationalist Spinoza rejects the dualism of soul-body dualism, and he defined the two directions of nature. According to him, soul and body are different images of one essence, and they interact (Della, 2008). Leibniz tried to explain this dualism with parallelism. This two-layered soul-body theory affects Psychoanalysts, and he first came up with the term subliminal. He explained the essence of body and soul with his term 'monad' (Perkins, 2010). After rationalists focussing on the source of mind and its mental interactions with the body, empiricists took attention to senses and perception based on sensations in contrast to rationalists. Empiricist John Locke claimed there is a real-world outside us, and we can grasp accurate information through our senses. Moreover, his ideas affected experimental psychology strongly. He used firstly the term 'association of ideas' (which means knowledge firstly grasped by senses, and it can be remembered the second time in the same situation then) (Spellman, 1997). Berkeley went much further on relying on senses, and he claimed there is no real-world except my perceived one (Bettcher, 2008). Hume approached sceptically. He claimed the mind is the collection of senses, and we cannot build a theory with this collection since we cannot guarantee the things which are always accurate will be confirmed next time (Garrett, 2015). They also examined constructing mind by compounding experiments. One of the other empiricist philosopher David Hartley examined the mechanism of reminiscence. He claimed continuity and repetition brought about this mechanism's foundation (Bower, 2010).

Modern Era

After rationalists and empiricists, Immanuel Kant tried to merge these two approaches, and his successors founded Psychology. Kant attacks the meaning of ratio, and he used mind instead of it. He claimed human beings were born with some mind process categories and a priori knowledge such as thinking in time, space, and determinism (he became close to rationalists' approaches in this idea). Kant affirmed that human beings could broaden their knowledge through experiences (he became close to empiricists' approaches in this idea). He continued that human beings construct their cognitive process with some posterior knowledge and mental categories. By the way, he argued the unity of cognition and tried to examine the structure of perception. He used the terms' noumena (thing-in-itself)' and 'phenomena'. Kant claimed that we could not grasp information about objects' essence; we only know them under our perception's perspectives. As a result of this, Kant evaluated cognition as an interactive process, and

the mind became more active by his philosophy. After Kant, his successors such as Fichte began to analyse the structure of cognition by analysing ego using the terms 'self-awareness' and 'self-consciousness'. He also claimed the way of grasping reality by only our mental intuition instead of thinking in the context of space, time, and determinism on the contrary Kant. He also paid attention to freewill. He legitimates the meaning of the world's existence considering the conflict between mind and freewill (Adamson, 2013). Schelling re-designed Fichte's ego as the absolute ego of his metaphysics. He defined consciousness as the manifestation of this absolute ego inside nature and human in different ways, similar to Spinoza's pantheism. Moreover, he defined this manifestation of the cognition process as art (Ostarić, 2018). Schleiermacher rejects Fichte's subjective idealism based on ego centred knowledge; he claimed the source of knowledge was the absolute God and rejected Kantian noumena, which described as an unknowable thing. He argued we could know the things-in-itself but not comprehensively (Vial, 2013).

One of Kant's other successors, Hegel, focused on the idea of Absolute things' manifestation of cognition. He rationally examined this manifestation, and he rejected Kantian noumena. In the late 18th century and early 19th century, Hegelian idealism, rejecting Kantian noumena-phenomena distinction and cognitive process, was the heyday. After the Marxian materialistic attack on Hegelian idealism and increasing positivist approaches, philosophy became more materialistic in the half of the 19th century (Plant, 2013). Also, in these years, Nietzsche attacked intellectualistic (evaluating the world as the result of cognition) approaches. He paid attention to living itself instead of striving with ideas. Kierkegaard's attack included taking attention to an individual's realisation of his/her existential awareness and Schopenhauer's highlighting the importance of freewill. Philosophical notions which influenced modern Psychology became more activity or behaviour centred instead of mind analysing centred (Hollingdale, 1985).

After the first half of the 19th century, due to the emergence of contingency in idealistic philosophy depending on both collapse of Hegelian idealism and scientific dangers to exterminate philosophy, caused to occur Neo-Kantian Schools and cognitive analyses. Before Neo-Kantians, one of Kant's successors, Herbart claimed psychology could not be an experimental science but mathematic can be applied (Cole, 2011). These ideas were the breakpoint on the scientification of psychology. He claimed there was an interaction between ideas, and this link can be calculated. He also studied relationships between psychology and metaphysics. He rejects the soul, and he re-defined the soul with interactions between sensations. He tried to construct new mechanical mental science, which was parallel to mechanical natural science etc. He also examines the structure of desire and its relationship with axiology (Dunkel, 1969).

In the second half of the 19th century, neo-Kantian Schools occurred in three different versions. The first one was Marburg School. The school team focused on developments in exact sciences and classical empiricism in the tradition of Hume and Mill (Fisher, 2002). Secondly, it was Gottingen centred School which focused on empirical psychology and reacting exact-science oriented neo-Kantianism (Burns, 2006). Then, Heidelberg School focused on idealism or Hegelian tradition. These three schools determined the 20th-century philosophy. Marburg School led to logical positivism and structuralism. Gottingen School directed to phenomenology and experimental psychology. Moreover, Heidelberg school led to neo-Hegelianism philosophies of life and existentialism. All three versions tried to re-construct philosophy as precise as science, and they tried to explode metaphysical speculations by producing new methodologies. I will examine Gottingen Centred School briefly. Jacob Frederick Fries influenced Gottingen Centred School. Fries had examined Kant's critical theory under the perspective of psychology, and he tried to construct a new religious philosophy against positivistic religion philosophy. This attitude makes Gottingen School close to Heidelberg School (analysing cultural schemata as a symbolic form such as Ernst Cassirer). He also claimed psychologism (reducing philosophy, science, religion into psychology). After him, Rudolf Otto and Leonard Nelson founded Gottingen School, and according to Nelson, the mind has an immediate, indisputable certainty about the principles of reason. Based on this certainty of an intuitive type (rejected by Kant but introduced by Fries), all further steps flowed according to strict logic (Burns, 2006). Otto also examined religious experiences under the influence of phenomenology (Ballard, 2001). On the contrary, this approaches some neo-Kantian philosophers and scientists tried to explain mental processes in the context of physiology. For instance, Herman von Helmholtz tried to explain the mental process through nerve conduction. He conducted some physical experiments questioning the perception of colours, voices etc. and examined fallibility in perception. Friedrich Albert Lange accepted the methodologies of natural sciences and physiology for empirical psychology; however, he rejected mind only under materialism. One of the other neo-Kantian Lotze defined the real world as the bare reflection of our perception, and

for him, the world was the reaction of our inner consciousness, the creation of soul's itself inside it. Moreover, he limited the reality to only perceived objects. He highlighted the interaction between body and soul. Moreover, Gustav Fechner inquired about the relationship between stimuli and the body's reaction, and he tried to construct analogical relations between mental activity and somatic effects on the body. E. von Hartman, also one of Kant's other successors, examined the structure of will. He acclaimed that we have no consciousness and nature occur because of will's unconscious internal interactions (Evans, 2017).

In the late 18th century and 19th century, some philosophers and scientists were studying some psychological issues. One of them's significant movements were evaluating psychological issues under the perspective of biology and physiology, and the other ones examined under the perspective of Pragmatism. For instance, in the physiological approach, Marshall Hall studied the neuropsychology of activities based on the will and involuntary. Charles Bell examined one-direction nerve connection and differentiation of somatic and sympathetic nerves. Johannes Muller examined specific nervous energies. Joseph Gall researched the location of mental processes in the brain. Pierre Flourens rejected the location of mental processes. Broca studied the location of speech intelligibility in the brain. John Hughlings Jackson investigated the hierarchy of activities in the nervous system. Fritsch and Hitzig inquired about the relationships between haptic sensations and their representation in the brain. Claude Bernard applied medical experiments to psychology. Darwin examined relationships between behavioural adaptation and the evolution process. Some pragmatic philosophers also examined soul, mind and body similar to their predecessors' empiricists'. For example, James Mill explained soul/mind like a machine working by stimuli coming from outside and continuing to work by its internal physical effects. He claimed that the mind only could be understood by analysing its parts, and the mind is not more than the collection of its parts. His son Stuart Mill rejected his idea about the mind is equal to its collection of parts. He defined complex ideas with their gained new qualities while occurring through the emerging of simple ideas. He defended his ideas by using Chemical examples based on chemical reactions that ended with new production emergence different from its components (Farrell, 2014).

After these philosophical and scientific arguments, psychology founded as a new scientific discipline by Wundt's experiments. Here, we will discuss the modern psychological movement and define the position of behaviourism in these movements.

The Foundation of Experimental Psychology and Behaviourism

Wundt founded the psychology laboratory, and he began to conduct psychology experiments. He examined cognition and introspection. Wundt tried to analyse the parts of cognition. For this reason, he conducted analyses based on analysing participants' experiences and identifying common findings to understand the structure of reflection of experiment on cognition (Andreas, 1972). He examined relations between physical stimuli and sensations through experiments such as audition and matters engaged with sound. He also claimed all conscious experiences had emotional elements. He also defined the structure of consciousness and divided it into two different stages. One of them is brilliant conscious, and the other one is ambiguous. He also investigated the comprehension process and explained this process in three stages. Comprehension of the image, interpretation of it and making it sense. He defined as a structuralist by his followers because of his approach based on part-whole relationships. He criticised that Gestalt Psychologists' idea based on 'the whole is not equal to collecting its components' etc.

In Germany, Wundt was criticised by his contemporaries such as Ebbinghaus, Franz Brentano, Carl Stumpf, Oswald Kulpe and Wurzburg School etc. Ebbinghaus criticised Wundt's non-measurable high-level mental processes and studied memory and mechanisms of reminiscence and oblivion etc. Franz Brentano criticised Wundt's psychology examining the content of cognition. He tried to examine cognition activities instead of evaluating cognition's content passively (Although Wundt considered sensations as an active process, he explained to them as though they were static) (Lindworsky, 2016). His student Sigmund Freud constructed psychoanalysis on Brentano's analyses on activities of cognition. Brentano also produced the term 'intentionality' to describe the activity of cognition which had its content before activated. Carl Stumpf also criticised Wundt's introspective theory.

In contrast to Wundt, Stumpf claimed specialisation on the experiments based on measuring experiments through introspective. (Wundt had claimed the specialisation on experiment field might bring about participants' to reflect their sensations non- spontaneously) (McBurney, 1990). The major criticism was made by Oswald Kulpe, who was the founder of Wurzburg School. He and his students tried to explain the development and formation of experiments. They tried to analyse non-imaged considerations (experiment non-possessing outside stimuli, abstract experiments, or internal processes).

On the contrary, Wundt's introspection based on the sensation of the outside. After Wundt, his mentee, an English psychologist Edward B. Titchener broadened Wundt's structuralist approach. He examined the content of mind through the introspective method and spreading Wundt's ideas Anglo-Saxon World and America. He tried to investigate the structure of mind in a structuralist way. Then, the terms 'association' and 'apperception' used to define active and passive elements of consciousness. He divided the mind into two structures: sensations and thoughts. Moreover, he also defined subcategories and types for sensation. He also analysed the structure of introspection. Because of his structuralist approaches, Titchener considered one of the other Structuralist Psychology members with Wundt (Woodworth, 1983; Smith, 2000).

Differently from German tradition, in Anglo-Saxon world and America, some psychologists, philosophers (especially Pragmatists) and scientists (such as Charles Darwin, Sir Francis Galton, William James, John Dewey, James McKeen Cattell, James Angell, Harver A. Carr, Stanley Hall and Robert Woodworth) tried to examine what is the function of mind, perception, sensation or consideration etc. under the perspective of the evolution process. They rejected the German traditions' normative aspects and research methods based on inquiring the mind's content. They made psychology more experimental in the context of Functionalism. Moreover, they led to the emergence of behaviourism with their experiments on animal intelligence and behaviours (Wixted, 2018). Due to their solid functionalist approaches, they were called 'Functionalists' in modern psychology.

Thanks to Darwin's research entitled 'On the Origin of Species', human intelligence began to be considered the latest animal intelligence stage. Thus, if human intelligence is the developed form of animal intelligence, this type of intelligence should have similarities. With these ideas, the function of human intelligence and its position in the evolution of process began to be examined by comparing different animal intelligence chosen from different evolution stages and using palaeontology, geology, demography, etc. Darwin's evolution theory also causes us to pay attention to individual differences (since there are no differences between the same species, we cannot talk about the evolution process) (Kantowitz et al. 2008). Sir Francis Galton also focused on individual differences, and he claimed the source of differences were our genes. He inquired about relationships between genes and mental capacity. This approach resulted in some tests measuring mental capacity. So, Galton used a new methodology called 'correlation' based on inquiring relationships among the variables. Alfred Binet also used some statistical methods to measure sophisticated intelligence age of intelligence and intelligence quotient etc. He also focussed on issues of acquired knowledge to measure the role of genes. Herbert Spencer applied Darwin's evolution process to sociology, and he examined the social behaviours and social identity under the perspective of evolution (Sharan, 2003). Also, William James, the founder of Functionalist School, defined consciousness as the element that helps people adapt to physical or sociological changes. He divided memory into two subcategories (primer and secondary, which were the pioneer of long- and short-term memory). He also examined cognition like Brentano and acclaimed all mental processes (sensation, perception, etc.) related to the cognitive process. He also produced the term 'stream of thought' to emphasise the folding structure of thought that emerged due to the overlap of thoughts. He also examined relations between stimuli and attention mechanisms. He inquired about 'personality and 'self-esteem' and studied habits, instincts, freewill etc. Two psychologists contributed the Functionalism; they were John Dewey and James Angell (McBurney, 1990). Dewey attacked Wundt and Titchener's mentality based on a firm conceptualization. His approach generated the term 'reflex arc' to emphasise the unity of the structure of behaviour (action and reaction). By the way, he defined the nature of reflex in the evolutionary process. Angell tried to define the limits of Functionalism. Harvey Carr defined the differences between the ideas of 'Functionalism' and 'Structuralism' and used some introspective methodologies and observation-experiment techniques (Kardas, 2014). R. Woodworth also produced the term dynamic psychology to highlight the variable characteristics of mental categories due to evolution and adaptation. Thanks to the characteristics of Functionalism based on experiments and observations, in America, applied psychology occurred. Applied psychology was supported by the clinical psychological movements and cause to gain importance of behaviour examinations. They were also increasing research focussing on animal behaviours led to the emergence of behaviourism in psychology as a new approach (MacGuigan, 1978). Before Behaviourism, we will examine how animal behaviour research contributed to Behaviourism.

According to Watson -who was the founder of Behaviourism- Behaviourism could be founded thanks to some research investigating human behaviours and their mental processes under the perspective of evolution and adaptation at the beginning of the 20th century. Some of these researchers were George J. Romanes, Lloyd Morgan, Jacques Loeb, Margaret Washburn, Wilhelm von Osten, Edward Lee Thorndike, Donald Hebb, Edwin Twitmyer, Vladimir Bekhterev and Ivan Petrovitch Pavlov. Romanes and Lloyd Morgan claimed that the only reliable

methodology to measure animals' mental processes was measuring, observing, and evaluating their behaviours (Ferguson, 1983; Ebbinghaus, 1998). Morgan also focused on animal behaviour structures and claimed complex behaviours occur by collecting simple behaviours, not sophisticated mental processes. Loeb focussed on behaviour, stimuli and mental process relations and claimed no necessity relations between mental process and behaviour. Washburn was the breakpoint on ideas emphasising animal and human mind analogy. After him, the human and animal mind and their relations with their behaviours have not been considered analogically (Smith, 2000). Von Osten made experiments on animals based on emphasising their educable mind. He taught mathematics to horses. Thorndike also focussed on the assertion claiming animals can be educable. He examined the structure of education and tried to grasp some analogical relations between human and animal education and its consequences, behavioural process. Hebb examined the stimuli and reflex processes on animals and highlighted the analogical relations between animal and human mental processes. Pavlov also examined conditioned stimuli and their effects on animal behaviours. His experiments affected behaviourists based on an analogical correlation between neutral stimuli and natural stimuli. Watson used these ideas to generate conditioned reflex, which would be the central term in Watson's Behaviourism (Healy et al. 2013).

Thanks to Functionalism and research on animal behaviour, John B. Watson founded Behaviourism as a new Psychology movement. He attacked Structuralisms' introspection approach due to its subjectivity and Functionalist's abstract terms such as mind, cognition, intelligence, mentality. Watson claimed psychological issues could be examined without these abstract and subjective methods. He emphasised the importance of observations and experiments and defined psychology to analyse phenomenological aspects such as behaviours. Watson rejected cognitive analyses and reduced them to habits and behaviours. He defined some correlations between animal and human behaviour and examined animal behaviour as the basic form of human behaviour. Watson rejected theories based on body-mind dualisms. His approaches were criticised due to the character based on reducing all mental processes to behavioural, sensational processes. He inquired about the prediction mechanisms of the mind before the behaviour occurs. He explained habits as the collection of previously conditioned reflexes. He also examined verbal behaviours, instincts, education mechanism, cognition process (he evaluated cognitive process as the behaviours of internal stimuli-reflex relations) etc. He used verbal report, objective testing, observations etc. (Piaget et al. 2014). Watson also drew attention to the importance of environment on behaviours' foundation on the contrary Functionalists' heredity centred approach. Watson's colleague, McDougall, investigated the sources of behaviours and claimed instincts cause to occur behaviours.

After Watson, in America, some psychologists such as Edwin Holt, Karl Lasley, Albert P. Weiss tried to apply his behaviourism to their approaches. Holt revealed internal motivations and claimed mental processes could be related to physical processes (Heffernan, 2015). Lasley put forward the principle of equipotentiality and law of mass action and examined the correlation between a healthy brain cortex and education capacity. Weiss tried to reduce behaviour to physics and claimed all behaviours could be analysed through analysing their physic-chemical particles. After them, in the middle of the 20th century, neo-Behaviourism appeared. Neo-Behaviourists strived to explain behaviours with only the principles of conditioned reflexes; claimed psychology must comply with the principles of 'operationism'. Edward Tolman rejected analysing the particles of behaviours and tried to examine behaviours holistically. He claimed purposive behaviours and generated the term 'intervening variable' defining variables occurring behavioural process and examined correlations between these variables emerging in the different behavioural process stages (Farrell, 2014; Shaffer, 2019).

Clark Leonard Hull believed behaviour is the interaction between environment and organism. Moreover, he related this interaction with the evolution process and put forward the term 'goal gradient' defining organisms' behaviours due to surviving in life and meeting the needs. Hull also claimed mechanical soul to eliminate ambiguity by reducing it to physics. He generated 'hypothetico-deductive' method to produce axioms through assessing test results (Hull, 1951). Burrhus Frederick Skinner also examined variables and tried to show functional correlations between them. He criticised the mentality about behaviours depending on reflex, and he focussed on operant behaviour which occurs spontaneously thanks to the activity of the organism instead of stimuli. Skinner also proclaimed the correlation between the mechanism of learning language and operant behaviour. He mentioned shaping the behaviour by controlling the results of behaviour. Skinner also emphasised the importance of environment on behaviour especially conditioned behaviours, through his famous experiment called 'Skinner Box'. He put forward the law of acquisition based on reinforcing exercises by operant behaviours. Behaviourism was

strongly criticised owing to its attributions based on ignoring mental processes and reducing them to stimuli-behaviour interactions (Evans, 2017; Hayek, 1999).

Behaviourism was strongly criticised due to its ideal depending on achieving objectivity by Gestalt Psychologists such as Wolfgang Kohler. He claimed the holistic structure of reality could not be grasped by analysing its particles. At this point, Gestalt Psychologists occurred by claiming 'the whole is different from the collection of its particles'. They focussed on comprehending the structure of behaviour holistically (Heffernan, 2015). The researchers in this group also rejected analysing the mind like the Structuralist approach and claimed cognition could only be figured out holistically. Max Wertheimer, Kurt Koffka, Wolfgang Kohler, and Kurt Lewin are the most famous movement representatives. According to the members of this movement, particles can only gain their meanings by the whole.

Max Wertheimer did some experiments to show that experiences/perception/behaviour occur thanks to simple sensations/reactions, but they cannot be reduced to these sensations/reactions. Since the perceived thing had different new quality from its components, he generated the term 'phi phenomena' to describe illusions of perception based on its holistic working mechanism. Phenomenology and Ernst Mach's ideas on space and time affected this School (Piaget et al. 2014). George Katona applied this approach to research on memory, education mechanism, problem-solving mechanisms etc. David Katz examined colour vision, the sensation of taste, and he defined the new emerging quality during their parts' combination as 'quality of Gestalt' and claimed the source of holistic perception connected with the purpose of perception. Kurt Koffka defined environment as physical and behavioural and claimed behavioural environment occurs differently due to changing perception attributions from person to person. Wolfgang Kohler focussed on the holistic character of correlations between goal and behaviour in the context of perception. Kurt Goldstein also researched holistic characteristics of the working mechanism of the brain (Hayek, 1999). Gestalt Psychologists worked on the organisation of perception and struggle with Behaviourism (due to its character based on ignoring abstract terms) and the analytical approach of structuralism (because of their approaches depending on analysing the mind's particles) (Robins, 2020).

After the holistic approaches of Gestalt psychologists, Kurt Lewin, who applied these approaches to social psychology, put forward a new theory called 'field theory' and examined social behaviours with their psychological environment from a holistic perspective. By his research, environment and behaviour relations began to be examined seriously. Modern psychology expanded by other movements. For instance, psychoanalysis was founded by Sigmund Freud and was developed by Carl Jung, Alfred Adler, Henry Murray, Erik Ericson to examine the layers of personality and its subliminal mechanisms. Humanistic psychology was founded by Abraham Maslow and developed by Carl Rogers to investigate human life's importance. Cognitive Psychology occurred to describe cognitive processes through analysing behaviours and their substructures. These movements have not been broadly explained in this paper.

Conclusion

After Second World War, thanks to collapsing Enlightenment and Modern ideas' collapsing, people began to believe they cannot rule over the environment and not explain the world under the perspective of modern epistemologies. In the 1950s and 60s, feminist and ecological movements affected the environment's importance and investigated relationships between humans and their surroundings. Thanks to research on environment-work psychology relationships, new debates could be done. Moreover, the migration of German founders of modern psychology to America because of Nazism, a new generation of psychology tradition began to occur gradually. There have been some contributions from Philosophy, especially from Pragmatism, Phenomenology and Existentialism to modern psychology.

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References

- Adamson, R. (2013). *Fichte*. Miami: HardPress Publishing
 Al, T. S. M. S. (2014). *Averroes, Kant and the origins of the Enlightenment: Reason and revelation in Arab thought*. London: I.B. Tauris

- Andreas, B. G. (1972). *Experimental psychology*. New York: Wiley.
- Ballard, S. (2001). *Rudolf Otto and the synthesis of the rational and the non-rational in the idea of the holy: Some encounters in theory and practice*. New York: Peter Lang.
- Barnes, J. (2015). *Pre-socratic philosophers*. New York: Routledge.
- Bettcher, T. M. (2008). *Berkeley*. London: Continuum International Publishing Group.
- Bower, G. S. (2010). *David Hartley and James Mill*. New York: Putnam.
- Burns, R. M. (2006). *Historiography*. London: Routledge.
- Cole, P. R. (2011). *Herbart and Froebel: An attempt at synthesis*. Lexington: bibliolife.
- Copleston, F. (2003). *A history of philosophy*: Vol. 1. London: Continuum.
- Della, R. M. (2008). *Spinoza*. New York: Routledge.
- Dunkel, H. B. (1969). *Herbart & education*. New York: Random House.
- Ebbinghaus, H. (1998). *Memory: A contribution to experimental psychology*. Bristol: Thoemmes Press.
- Evans, E. G. S. (2017). *Modern Educational Psychology: An Historical Introduction*. London: Routledge.
- Farrell, M. (2014). *Historical and philosophical foundations of psychology*. New York, NY: Cambridge Univ. Press.
- Ferguson, H. (1983). *Essays in experimental psychology*. London: Macmillan.
- Fisher, S. (2002). *Revelatory positivism?: Barth's earliest theology and the Marburg School*. Oxford: Oxford University Press.
- Garrett, D. (2015). *Hume*. Abingdon, Oxon; New York, NY: Routledge
- Hackett, J. (1992). *Medieval philosophers*. Detroit, Mich: Gale Research Inc.
- Hayek, F. A. (1999). *The sensory order: An inquiry into the foundations of theoretical psychology*. Chicago: University of Chicago Press.
- Healy, A. F., Proctor, R. W., Weiner, I. B. (2013). *Experimental psychology*. Hoboken, N.J: John Wiley & Sons, Inc.
- Heffernan, T. M. (2015). *Student's Guide to Studying Psychology*. London: Taylor and Francis.
- Hollingdale, R. J. (1985). *Nietzsche*. London: Ark Paperbacks.
- Hull, C. L. (1951). *Essentials of behavior*. Westport: Greenwood Press.
- Kantowitz, B. H., Elmes, D. G., & Roediger, H. L. (2008). *Experimental psychology*. Belmont, CA: Wadsworth, Cengage Learning.
- Kardas, E. (2014). *History of Psychology: The Making of a Science*. Boston, MA: Cengage Learning.
- Lindworsky, J. (2016). *Experimental psychology*. New York: Psychology Press.
- MacGuigan, F. J. (1978). *Experimental psychology: A methodological approach*. Englewood Cliffs: Prentice-Hall.
- McBurney, D. (1990). *Experimental psychology*. Belmont, Calif: Wadsworth Pub. Co.
- Ostarcic, L. (2018). *Interpreting Schelling: Critical essays*. Cambridge: Cambridge University Press.
- Perkins, F. (2010). *Leibniz*. London: Continuum International Pub. Group.
- Piaget, J., Frawley, P., & Reuchlin, M. (2014). *Experimental Psychology Its Scope and Method: History and Method*. London: Psychology Press.
- Plant, R. (2013). *Hegel*. Hoboken: Taylor and Francis.
- Rieber, R. (2013). *Wilhelm Wundt and the Making of a Scientific Psychology*. New York, NY: Springer.
- Robins, S. (2020). *The Routledge companion to philosophy of psychology*. Abingdon, Oxon; New York, NY: Routledge.
- Shaffer, D. (2019). *Developmental Psychology*. Toronto: Cengage.
- Sharan, A. K. (2003). *Experimental psychology*. New Delhi: Anmol Publicaitons.
- Smith, J. L. (2000). *The psychology of action*. New York: St. Martin's Press.
- Spellman, W. M. (1997). *John Locke*. New York: St. Martin's Press.
- Wixted, J. T. (ed.) (2018). *Stevens' handbook of experimental psychology and cognitive neuroscience*. Volumes 1-5. New York: John Wiley and Sons, Inc.
- Vial, T. M. (2013). *Schleiermacher*. London: T & T Clark.
- Wilson, M. D. (2016). *Descartes*. London: Routledge
- Woodworth, R. (1983). *Experimental psychology*. New York: Henry Holt.