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From Antiquity to Artificial Intelligence: Mind and Cognition Studies from the Perspective of Psychology

Gün Pakyürek [1]

Abstract

Among the subjects of psychology, the mind has been tried to be understood since the pre-scientific period. With Wundt's establishment of the first psychology laboratory, human behaviors were investigated with scientific methods, and the psychology journey began with these studies. Schools such as structuralism, functionalism, and behaviorism came to the fore according to the conditions of the period and cognitive studies have gained importance, especially with the development of technology in the recent period. Although most researchers state that behaviorism lost power with the cognitive revolution, it is also suggested that behaviorism transformed and continued its existence in parallel with the cognitive revolution. Behavioral psychologists such as Tolman and Hull were among the researchers who referred to the mind and provided the transition between behaviorism and cognitive psychology. Today, cognitive psychology studies have become dominant as one of the strongest sub-fields of experimental psychology. However, detailed experimental methods conducted during behaviorism continue to be used in cognitive studies. In this context, experimental psychology continues as the umbrella concept of many fields such as psychophysics, perception, attention, memory, thinking, decision-making, intelligence, development, social psychology, environmental psychology, and motivation. It has undergone significant changes since its inception, shifting from basic sensory and perception experiments to complex studies of cognitive, emotional, and social processes. With the pandemic period, online research has also increased outside of the laboratory environment. Especially during and after the pandemic period, a wide range of psychology studies continue to be conducted, from protecting human psychological health to understanding the mind in artificial intelligence research.

Keywords: Psychology, Artificial Intelligence, Experimental Methods, Cognitive Revolution, Mind

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Antik Çağdan Yapay Zekaya Psikoloji Perspektifinden Zihin ve Biliş Araştırmaları

Gün Pakyürek [1]

Öz

Psikoloji konuları arasında yer alan zihin bilim öncesi dönemden beri anlaşılmaya çalışılmaktadır. Wundt'un ilk psikoloji laboratuvarını kurmasıyla beraber insan davranışları bilimsel yöntemle araştırılmış ve psikolojinin yolculuğu da bu çalışmalarla başlamıştır. Yapısalcılık, işlevselcilik ve davranışçılık gibi ekoller dönemin koşullarına göre ön plana çıkmış ve son dönemde özellikle teknolojinin gelişimiyle beraber bilişsel çalışmalar ağırlık kazanmıştır. Çoğu araştırmacı bilişsel devrimle beraber davranışçılığın güç kaybettiğini belirtse de davranışçılığın dönüşerek bilişsel devrimle beraber paralel olarak varlığını sürdürdüğü de öne sürülmektedir. Tolman ve Hull gibi davranışçı psikologlar zihinsel süreçlere atıfta bulunup davranışçılıkla bilişsel psikoloji arasında geçişi sağlayan araştırmacılardan olmuşlardır. Günümüzde bilişsel psikoloji araştırmaları deneysel psikolojinin en güçlü alt alanlarından biri olarak baskın hale gelmiştir. Ancak davranışçılık döneminde yapılan detaylı deneysel yöntemler bilişsel çalışmalarda kullanılmaya devam etmektedir. Bu bağlamda deneysel psikoloji psikofizik, algı, dikkat, bellek, düşünme, karar verme, zekâ, gelişim, sosyal psikoloji, çevre psikolojisi, motivasyon gibi birçok alanın çatı kavramı olarak varlığını sürdürmektedir. Psikoloji çalışmaları, başlangıcından bu yana önemli ölçüde değişim geçirerek temel duyusal ve algı deneylerinden bilişsel, duygusal ve sosyal süreçlerin karmaşık araştırmalarına geçiş yapmıştır. Pandemi dönemiyle beraber laboratuvar ortamı dışında çevrimiçi araştırmalar da artış göstermiştir. Özellikle pandemi dönemi ve sonrasında insanın psikolojik sağlığının korunmasından yapay zekâ araştırmalarında zihnin anlaşılmasına kadar geniş bir yelpazede psikoloji çalışmaları yapılmaya devam etmektedir.

Anahtar Kelimeler: Psikoloji, Yapay Zekâ, Deneysel Yöntemler, Bilişsel Devrim, Zihin

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Introduction

The concept of the mind is one that is open to discussion, yet it is not susceptible to the same forms of observation and analysis as other, more tangible entities (Ryle, 1951, p.27). Despite its frequent usage in titles comprising between 500 and 1,000 words per year over the past two decades, there remains no consensus on a definition of the mind (Mandler, 2007). The concept of the mind, which Ryle (1951, p.69) likened to a ghost in a machine, has been the subject of research since the time of the ancient Greeks. From this perspective, psychology, which has a history of 150 years, is one of the newest fields of study. Experimental psychology has been engaged in an investigation of questions posed from a philosophical standpoint, employing scientific methodology, for approximately 150 years. This field of study has been seeking answers to a multitude of questions pertaining to psychology, particularly those related to the mind. It is evident that the philosophical tenets espoused during the ancient Greek era continue to inform contemporary psychological thought. In his work, Plato posited that the path to truth lies in the power of intuition, suggesting that observation can potentially mislead individuals. In contrast, Aristotle sought to ascertain the truth through experiments based on information obtained from the five senses and observations. The influence of Plato's ideas can be observed in the development of German psychology, whereas the contributions of Aristotle are evident in the contemporary approaches to psychology in Britain and the United States (Bruno, 1996, p.22). Consequently, while rationalism, idealism, and introspection gained prominence in Germany, behaviourism, pragmatism, and functionalism emerged as dominant forces in America and England (Bruno, 1996, p.23). In the 17th century, Descartes proposed the concept of dualistic thought, which posits that the human mind is both free and automatic. This concept was subsequently developed by English empiricists and associationists and ultimately articulated by Locke (Boring, 1957, p.170). In the view of Locke, sense perceptions, that is to say, the experience of physical reality, constitute the source of knowledge. John Stuart Mill further developed the views put forward by empiricists. Ultimately, Wundt was influenced by Mill's contributions and played a pivotal role in guiding psychology away from abstract concepts and towards laboratory-based investigations (Bruno, 1996, p.69). Wundt pioneered investigations into the nature of consciousness within a laboratory setting, prioritising the concept of consciousness itself (Mutlutürk, 2023, p.244).

Kant (1724–1804) argued that psychology could not become a science because psychological phenomena could not be measured (Gardner, 1985, p.59). However, in the mid-19th century, Helmholtz, Weber, Fechner, and Wundt were among the first scientists to apply experimental methods to the study of the mind and cognition (Schultz & Schultz, 2011, p.52). The methods developed by Fechner made it possible to measure the mind, which in turn informed Wundt's design of the plans for psychology (Schultz & Schultz, 2011, p.54). Helmholtz's most significant contribution to the field of psychology was his development of the theory of perception. The findings of Helmholtz led to the emergence of physiological psychology and the psychophysical understanding that would be processed in this branch of science (Boring, 1957, p.311). Helmholtz, Weber and Fechner conducted systematic experiments in which they altered the stimuli under controlled conditions and recorded the subjects' experiences in response to these new situations. The results of the studies were evaluated from a physiological perspective, with no consideration given to their psychological significance (Schultz & Schultz, 2011, p.114).

Despite Fechner's contributions to operationalising the mind and publishing a seminal text, "Elements of Psychophysics", Wundt is regarded as the founder of psychology. This is because Fechner did not set out to establish a new scientific discipline. However, Wundt explicitly articulated this in his 1874 publication, Principles of Physiological Psychology, with the intention of establishing a new scientific discipline. The establishment of the first psychology laboratory by Wundt in 1879 is widely regarded as the foundation of psychology as an academic discipline (Mandler, 2007, p.52). Wundt, the inaugural experimental psychologist, was responsible for establishing the first journal and initiating experimental psychology as a scientific discipline (Schultz & Schultz, 2011, p.64). Wundt conducted research into a range of psychological phenomena, including sensory processes, perception, emotions, consciousness, attention, desire, and space-time perception. He employed the introspection method to investigate these topics within the field of experimental psychology (Mandler, 2007, p.55). Wundt's introspective methodology sought to elucidate the fundamental constituents of mental processes, with a particular emphasis on sensation, perception, and reaction time (Mandler, 2007, p.57). The principal distinction between Wundt's introspective approach and alternative methodologies is that it is conducted within standardised and controlled conditions. In such instances, the intensity and temporal aspects of a given reaction are quantified with the aid of appropriate physical units, specifically when a reaction is elicited (Özakpınar, 2011, p.86). Wundt proposed that the objective of scientific research in psychology should be to analyse conscious processes, determine the form of combinations of elements derived from this analysis, and identify the laws governing the emergence of these combinations (Özakpınar, 2011, p.89). Concurrently with Wundt, Ebbinghaus in Germany was influenced by Fechner's mathematical approach to psychological phenomena and applied the experimental method to higher-level mental processes (Schultz & Schultz, 2011, p.64). In studies conducted by Ebbinghaus, a contemporary of Wundt, the phenomenon of forgetting in memory performance was demonstrated through the use of self-subjects. The studies in question employed objective experimental methods (Özakpınar, 2011, p.102). Ebbinghaus was the first researcher to employ objective experimental methods to measure memory performance by changing variables that strengthen associations (Cangöz, 2005, p.55). Consequently, the concept of association put forth by the British empiricists was subjected to empirical investigation, and evidence was presented to substantiate its efficacy (Schultz & Schultz, 2011, p.69). Titchener, a student of Wundt, presented his approach under the designation of "structuralism." He employed the introspection method in a manner distinct from that of Wundt, additionally implementing modifications to the language utilized by the participants (Mandler, 2007, p.97). Titchener proposed that one of the objectives of psychology should be to identify the most basic forms of conscious processes, determine the fundamental laws that govern them, and establish a connection with the underlying physiological processes (Schultz & Schultz, 2011, p.87). The main criticisms of structuralism concern the method of introspection. The primary criticisms of introspection are the lack of consensus among those who engage in it, the necessity for rigorous training to ensure proficiency, the lack of trust in self-reports, and the limitations of generalizability (Turner, 1967, p.11). Those who posit that sensations and emotions do not solely exist within the domain of consciousness, as postulated by Wundt, paved the way for a new movement in psychology, namely functionalism (Bruno, 1996, p.95). In contrast to the prevailing approach in Europe, American pragmatism shifted the focus

from an investigation of the fundamental aspects of consciousness to an examination of its purpose.

In the early 20th century, behaviourism, led by Watson, rejected introspection and focused exclusively on observable behaviours. Pavlov emphasized the role of classical conditioning in shaping behaviour, demonstrating that when a predictive relationship exists between two stimuli, the resulting behaviour is influenced accordingly. Additionally, operant conditioning experiments demonstrated that certain stimuli can elicit an increase in behaviour, while others can result in a reduction (Benjamin, 2023, p.123). Skinner further developed this paradigm by emphasizing reinforcement and punishment as key factors in shaping behaviour (Mutlutürk, 2023, p.245). The tenets of behaviourism are entirely focused on objective methods and the strict control of variables. The subject of psychological research is observable and measurable behaviours, and some of the experimental methods currently in use were developed by behavioural psychologists. Consequently, the concept of the mind, which is not susceptible to objective observation and examination, was not addressed in studies until the cognitive revolution. However, it became evident over time that a purely observational approach to understanding humans is insufficient (Karakaş & Bekçi, 2003, p.240). In other words, some behavioural researchers have proposed that a stimulus cannot always be reduced to physical terms and that it should be explained in perceptual and cognitive terms. For example, although Tolman self-identified as a behaviourist, he made connections with Gestalt psychology by referencing the concept of cognitive maps (Özakpınar, 2011, p.122). Moreover, the field of Gestalt psychology has demonstrated remarkable resilience in the face of the prevailing dominance of behaviourist perspectives, serving as a pioneering force in the cognitive revolution (Gardner, 1985, p.292).

The influence of the Gestalt movement has been considerable in fields as diverse as perception, learning and motivation (Schultz & Schultz, 2011, p.33). It is hypothesised that the questions posed by the pioneers of this theory remain highly pertinent and may be the sole theory capable of elucidating the complex structure of psychology (Mungan, 2020, p.615).

The re-emergence of interest in the mind as a research domain within the field of psychology can be traced back to the 1950s. During the Second World War, psychologists became aware of the shortcomings of the concepts they were employing in the context of real-life problems. This led them to question the field and to develop more effective ideas. The computers and technologies initially deployed in warfare during World War II subsequently found application in scientific contexts following the cessation of hostilities. Furthermore, the theory of information derived from engineering in the 1940s facilitated the quantification of concepts that were previously inadequately or not measured at all (Benjamin, 2023, p.165).

Piaget's studies, which were initially overlooked by behaviourists, were subsequently re-evaluated in the context of the cognitive revolution, leading to renewed interest in cognitive development (Gardner, 1985, p.117). In particular, research on topics such as memory, language, and problem-solving experienced a significant surge in activity between 1955 and 1960 (Gardner, 1985, p.117). In this process, Newell and Simon investigated theories of computation, Chomsky investigated the development of language, and Miller investigated the limits of short-term memory. The findings from

these studies continue to exert a significant influence on contemporary psychological research.

Are there parallel histories? The relationship between behaviourism and the cognitive revolution between 1930 and 1980

The interpretation of the past is not independent of the perspective of the interpreter. An examination of the history of psychology from different perspectives reveals that the chronology and formation of events can be interpreted in a number of ways. The traditional view is that behaviourism lost its influence with the advent of cognitive developments in the 1950s, giving way to cognitive studies (Baars, 1986, p.65; Benjamin, 2023, p.180; Gardner, 1985, p.137; Karakaş & Bekçi, 2003, p.240; Mandler, 2007, p.44; Özakpınar, 2011, p.67; Schultz & Schultz, 2011, p.379; Sperry, 1993, p.880). Leahey (2000, p.528) challenges the notion that radical behaviourism met its decline at the hands of cognitive developments, arguing that this is a misperception. It has been hypothesised by some researchers that the term "behaviourism" is an inaccurate designation for this period; rather, it has continued to flourish (Friman et al., 1993, p.660; Moore & Cooper, 2003, p.71; Watrin & Darwich, 2012, p.270; Wyatt et al., 1986, p.102). The behaviourist perspective maintains that the approach of behaviour analysis continues after the decline of behaviourism (Watrin & Darwich, 2012, p.272). The behaviour analysis approach is comprised of three fundamental areas of activity, namely: The field of basic science, which is particularly focused on laboratory-based experimentation, encompasses the study of behavioural processes through empirical investigation. Applied behaviour analysis, on the other hand, seeks to address practical issues by applying the insights gained from analytical behavioural research. Finally, conceptual analysis of behaviour represents a critical aspect of the methodology employed in this field (Moore & Cooper, 2003, p.72). The contributions of behaviourist psychologists such as Tolman and Hull to the field of cognitive processes further expanded the boundaries of behaviourism (Moore & Cooper, 2003, p.73). The debate between Watson and his colleagues regarding the study of consciousness, as outlined in his 1913 publication, "Psychology as the Behaviorist View It," continued until the introduction of functional definitions of behavior by Skinner in the 1930s. These definitions were further expanded upon in Skinner's 1938 book, "The Behavior of Organisms." Subsequently, Skinner proceeded to implement a series of successful applications of operant behaviour. During the 1950s, while behavioural analyses were being developed, cognitive studies increased in parallel with behavioural analyses, but with greater momentum. In light of the aforementioned, it can be posited that the evolution of the behaviourist approach, which unfolded at a comparatively gradual pace in comparison to the advancement of cognitive studies, may be disregarded by historians of psychology. In 1957, Skinner began applying his principles to language in his book Verbal Behavior, thereby initiating the practice of behavior analysis (Moore & Cooper, 2003, p.76). In the period between 1950 and 1980, Skinner was the recipient of numerous awards for his studies, published a journal dedicated to the field of behaviour analysis, and is regarded as the scientist who had the most significant influence on American Psychology (Schultz & Schultz, 2011, p.243). This situation is illustrated by behaviourist psychologists as evidence that behaviourism did not become obsolete with the advent of cognitive psychology in the 1950s. Rather, it continued to evolve in parallel with cognitive developments.

The advent of the cognitive approach, rather than the termination of behaviourism, initiated an alternative concurrent trend, whereby history was interpreted from a unique perspective (Watrin & Darwich, 2012, p.275). It is therefore evident that the methodological information developed by behaviourist psychologists can continue to be used effectively in the present day. In contemporary experimental psychology, the emphasis is on the mind, cognition, and behaviour (Atkinson et al., 1996, p.233). However, cognitive fields, which are advancing with greater momentum, are spreading more effectively into the field of experimental psychology.

New Developments in Psychology

As in other fields of science, the science of psychology progresses in response to global events. The direction of psychology is influenced by a number of factors, including the challenges faced by countries, the occurrence of wars, technological advancements, and the governance structures of nations. To illustrate, the election victory of Hitler in 1933, which saw him secure 44% of the vote and become prime minister, marked a shift in German psychology away from experimental approaches. During the period in which Hitler was in power, he was accepted as a prominent figure in the field of psychology, with topics such as enhancing the cultural and social fabric of Germany, addressing the issue of mixed-race individuals, developing effective military leadership strategies, fostering national unity, and understanding the dynamics of social life being discussed at psychology congresses held in Germany (Mandler, 2007, p.129).

In the context of the ongoing pandemic, which has persisted for approximately 1.5 years due to the Coronavirus that originated in Wuhan, China in 2019, there has been a notable surge in research activity. One of the most extensively explored areas has been the study of human behaviours in socially distanced contexts. Concurrently, the number of online experimental studies has increased in conjunction with the pandemic (Peyton et al., 2022, p.383). The advent of technology has made online studies a more accessible method, thereby facilitating the recruitment of a diverse range of participants. Nonetheless, it has been asserted that factors such as an absence of motivation and concentration within this environment have a detrimental effect on performance. (Reips, 2002, p.247). Nevertheless, some studies indicate that the outcomes of online assessments are comparable to those obtained in laboratory settings (Germine et al., 2012, p.850). To illustrate, Backx et al. (2020, p.2) evaluated attention, memory, problem-solving, and information processing speed in both web-based and laboratory settings. The findings indicated that the cognitive performance results obtained in both environments were largely consistent and exhibited a high level of similarity, particularly in attention, reaction time, and problem-solving tasks. The participants indicated that the web-based environment was accessible and that the home environment offered lower stress levels. However, it was emphasised that environmental distractions could negatively affect performance in the web-based environment. The study posits that web-based tests can be a robust alternative in terms of validity and reliability when compared to tests conducted in a laboratory environment. However, it highlights the necessity for enhancements in the design of online platforms to minimise distractions. In our country, a comparison was made between online and laboratory studies (Ata and Pakyürek, 2022, p.1245). Despite the absence of any statistically significant differences in terms of accuracy and intergroup significance in the change detection task, reaction time was found to be slower in the online environment.

In the contemporary era, in line with the globalising world and the advent of novel technologies, there has been a notable surge in both cognitive psychology and cognitive neuroscience studies, as well as online studies. In the early years of cognitive psychology, the mind was metaphorically likened to a computer. This analogy gave rise to the development of analogous coding, storage, and retrieval models in the field of mind studies. The globalisation of the world and the facilitation of information exchange have also led to an increase in interdisciplinary studies. Virtual characters in games developed by companies are capable of exhibiting behaviours that are similar to those observed in real life due to the extensive algorithms that govern their behaviour. It seems reasonable to posit that artificial intelligence will assume a prominent position in the future of psychological studies.

A Long-lasting Topic in Psychological Research: Perception, Attention, and Memory

The history of psychology demonstrates a cyclical evolution of ideas, with new trends and approaches emerging and old ones declining. It can be observed that the evolution of ideas, methodologies and theoretical frameworks does not result in their termination, but rather in their transformation. The cumulative advancement of science enables the integration of disparate approaches, facilitating a comprehensive understanding of the field. The sub-field of experimental psychology, cognitive psychology, currently encompasses studies of perception, attention, and memory. Experimental psychology provides an umbrella conceptual framework that guides studies in this area and makes a valuable contribution to the methodological approach.

The nativist perspective maintains that the visual system, comprising the eye and the brain, is the primary determinant of visual perception. The Gestalt school introduced a new dimension with its integrative perspective, enabling the examination of cognitive processes through the adoption of a top-down information-processing approach (Mungan, 2020, p.614). The history of cognitive psychology is full of examples of the opposing approaches of nativism and empiricism. However, the Gestalt school rejects these dichotomies in favour of a holistic perspective that is not constrained by the limitations of these two opposing viewpoints. The increasing complexity of mathematical models and the remarkable advances in neuroscience and computer science have led to a resurgence of interest in Gestalt theory (Mungan, 2020, p.615). Studies have been conducted on neurophysiology and the functioning of neurons in the brain, with the development of neural network models for the purpose of investigating attention tasks (Anderson, 1990, p.130). In connectionist models, the flow of information is facilitated by parallel connections between neurons. In connectionist models, the flow of information is facilitated by parallel connections between neurons. Conversely, attention studies employing techniques such as the dichotic listening test, the Stroop Test, and the d2 attention test remain a prominent area of research.

Furthermore, studies have been conducted to ascertain how individuals direct their attention when presented with a variety of stimulus sets, utilising tools such as eye-tracking devices. The objective of contemporary cognitive neuroscience is to gain a deeper comprehension of the mechanisms underlying attention. This endeavour is pursued through the utilisation of sophisticated imaging techniques, such as positron emission tomography (PET) and functional magnetic resonance imaging (fMRI), which facilitate

the observation of brain activity in situations that demand attention. The investigation of brain frequency values employs a range of experimental methods, with a particular focus on situations such as sleep and wakefulness. This is achieved through the use of electroencephalography (EEG), which enables the measurement of electrical brain wave activity.

The model, designated "Distributed Cerebral Cortical Networks," was proposed by Mesulam (Cangöz, 2005, p.57) within the domain of cognitive neuroscience. This model seeks to elucidate the neural structures and processes pertaining to the sensory recording, pattern recognition, short-term storage and coding, long-term storage and retrieval stages, which constitute the elements of the classical information processing model, and their neural connections (Cangöz, 2005, p.57). Furthermore, non-laboratory-based memory types, including autobiographical memory, eyewitness memory, and social memory, represent a significant area of research interest. Furthermore, research on prospective memory, a specific type of memory, is experiencing a notable surge in interest. Two of the 12 chapters in Hartonek's (2008, p.351) book, entitled "Experimental Psychology Research Trends", are devoted to the topic of prospective memory, including an examination of relevant research and theoretical models. Graf (2012, p.10) posited that prospective memory had not been the subject of extensive investigation in the past due to a lack of understanding. However, he suggested that recent developments have led to a surge in interest in this area of research. One area that has been the subject of considerable recent research is that of emotional memory. In the past, emotions were regarded as confounding variables and were therefore excluded from memory studies. The influence of emotions on cognitive processes and behaviour is now a prominent area of investigation in many research fields. The amygdala has been identified as the brain region associated with emotional memory, as evidenced by findings obtained through brain imaging techniques. The recall of emotional memories, even after an extended period, and the effects of basic emotions on memory, continue to be the subject of investigation through the utilisation of diverse experimental configurations.

Contemporary Approaches

Computational psychology employs algorithms to simulate cognitive processes, thereby producing models for decision-making and problem-solving (Sun, 2008, p.87). Such models assist in the formulation of theories by anticipating behavioural responses under diverse circumstances. By employing algorithms that are inspired by neural networks and artificial intelligence, researchers are able to simulate the functioning of the human mind. The application of machine learning tools to the analysis of large data sets enables the identification of patterns that inform psychological theories and clinical practices. To illustrate, predictive models can identify individuals at risk of mental health disorders and develop preventive intervention programmes (Richards & Richardson, 2012, p.331).

In addition, reinforcement learning models have been used extensively to study reward-based decision making, with applications in helping to explain the etiology of disorders such as addiction and anxiety, and in understanding how individuals modify their behaviour in response to feedback (Sutton & Barto, 2018, p.65).

The use of virtual reality and augmented reality technologies enables the creation of highly realistic environments that can be used to conduct controlled behavioural studies. In contrast to the traditional laboratory environment, virtual reality allows researchers to

replicate real-life scenarios while maintaining the standards of experimental accuracy. In one study, models were constructed to examine how individuals cope with anxiety in real-world environments when virtual reality was employed to investigate social interactions in public speaking contexts (Pan & Hamilton, 2018, p.397). In our country, virtual environments are also employed in the treatment of phobias and in the resolution of mental health issues (Üzümcü et al., 2011, p.101). Recently, wearable devices have also begun to be employed in this field. Such devices provide real-time data on physiological states, thereby facilitating dynamic studies of stress and emotion (Wu et al., 2022, p.1101). These tools facilitate research with enhanced ecological validity by examining the mind in non-laboratory settings.

The advent of big data is creating new avenues for psychological inquiry. The accessibility of large data sets from social media, online experiments, and longitudinal studies is enabling psychologists to identify trends that were previously inaccessible. For example, the analysis of mood on the social media platform Twitter has been used to examine the emotional impact of social events in real time (Golder & Macy, 2011, p.1879). Contemporary psychology is characterised by the integration of advanced technologies, interdisciplinary methods and an emphasis on ecological validity. As the field evolves, the combination of methods allows for increasingly sophisticated modelling of the complexity of the human mind.

Conclusion

The mind, which has been described as a "ghost in the machine," has been likened to automaton systems, telegraphs, and finally computers due to technological developments in recent times (Zarkadakis, 2015, p.228). It is argued that comparing the flexible structure of the mind to an electronic data processing machine, such as that of a computer, is a reductionist approach (Epstein, 2016, p.3). New theoretical frameworks continue to emerge in the field of cognitive science, seeking to explain the nature of the mind. The initial objective of experimental psychology was to comprehend the functions of the mind, including perception, attention, and memory. This was achieved by conducting measurements in a laboratory setting, which not only made psychology more scientific but also distinguished it from philosophy. The concept has become an umbrella term, affected by social, scientific, and technological developments to the present day. In recent years, experimental psychology has expanded to encompass topics such as motivation, emotion, and social psychology. Consequently, experimental psychology has become the foundation for all psychological studies, particularly in the context of adapting the experimental method to psychology.

The experimental methods developed by experimental psychology in the studies of technological developments and different disciplines provide the opportunity to offer clearer answers to the problems of the mind that have been investigated since the Ancient Greek period. Psychology also occupies a place among the multidisciplinary sciences, contributing a methodological perspective to the investigation of fundamental research questions in the social sciences.

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