DELMAR INTERNATIONAL

FOR UNDERADUATE AND POSTGRADUATE

PROFESSIONAL STUDIES COLLEGELTD

Professional Research

Neuropsychology and its relationship to graphology.

The Researcher

NEMAT EGBALI OMAR IBRAHIM

Supervisor

Committee for research and advanced professional studies

2023

SUMMARY

Neuropsychology and graphology are two important scientific fields that address the scientific study of human behavior and the factors that influence it. Neuropsychology focuses on studying the neural processes and chemical changes occurring in the nervous system during human behavior, while graphology focuses on the study of handwriting and what can be inferred from it about personality and behavior.

It is interesting to note that there are some overlaps between the two. For example, some studies suggest that certain neural processes can influence writing, indicating that neural factors may affect handwriting and provide information about an individual's personality. Additionally, using neuropsychological techniques can aid in understanding how graphology interprets handwriting and obtaining accurate information about behavior and personality.

Therefore, this thesis aims to explore the intersections between neuropsychology and graphology and determine how they can collaborate to better understand human behavior and personality. The study will include the use of neuropsychological techniques to understand the neural processes occurring during writing, as well as examine the relationship between neural and graphological factors and the psychological changes occurring in personality. This study is expected to provide valuable insights into understanding human behavior and personality.

It is well-known that there are overlaps between psychological and neural factors, suggesting that the nervous system can affect writing and handwriting, thereby providing information about personality and

behavior. Furthermore, the use of neuropsychological techniques can help in understanding the neural processes occurring during writing, and this information can be used to enhance our understanding of behavior and personality.

This study is expected to be beneficial in various fields, such as social and professional relationships, education, and psychological therapy, among others. For example, the information gained could be used to improve interpersonal and group relationships, enhance educational and training processes, and refine neurological therapy.

Neuropsychology is a branch of psychology that focuses on studying the relationship between neural activity and human behavior. This field is based on understanding the neural processes occurring in the nervous system during human behavior and interpreting these processes through the information provided by human behavior.

The intersection of neuropsychology and graphology can open new avenues in understanding the relationship between neural activity, human behavior, and personality. By using neuropsychological techniques, detailed information about neural activity associated with writing and handwriting can be obtained, which can then be used to gain a deeper understanding of human behavior and personality.

Furthermore, graphological analysis can help in interpreting and translating this information into insights about personality and behavior. This research is expected to have a positive impact on various fields, such as social and professional relationships, education, and psychological therapy. It may assist in improving social and professional relationships.

The study Problem:

The problem of this study lies in the current lack of research connecting neuropsychology and graphology. Although there are some recent studies focusing on understanding the relationship between neural activity, human behavior, and personality, they do not include a comprehensive graphological analysis.

More specifically, this field of research lacks focus on the intersection between neural activity and the graphological elements that appear in handwriting. This gap prevents us from fully understanding the precise relationship between neural activity and graphological factors and how they impact personality and behavior.

By addressing this issue, this study could open new avenues for understanding the relationship between neural activity, human behavior, and personality, and contribute to the development of practical applications in various fields such as social and professional relationships and psychological therapy. Consequently, the study could be highly beneficial for both the community and researchers.

The importance of studying:

The true significance of this study lies in contributing to a precise understanding of the relationship between neural activity and the graphological elements present in handwriting. Through this deeper understanding, the study can contribute to the development of practical applications across various fields.

For instance, the study could help improve social relationships among individuals by shedding light on how neural and graphological factors influence social interactions. It may also aid in enhancing professional performance and career orientations by analyzing the impact of neural and graphological activity on job performance and creative abilities.

Additionally, this study could contribute to psychological therapy by examining the relationship between neural activity, graphology, and psychological issues, and exploring how this information can be used to develop therapeutic techniques.

In summary, this study holds significant importance for improving individuals' social and professional lives and advancing psychological therapy by illuminating the relationship between neural activity and graphological elements in handwriting.

Objectives of the study:

This study aims to achieve several main objectives, which include:

1. ***Understanding the relationship between neural activity and the graphological elements present in handwriting*** *by analyzing the results collected from previous studies and research.*
2. ***Identifying the graphological elements that are affected by neural activity*** *and determining the extent of this influence on graphological features.*
3. ***Revealing the relationship between neural activity and the psychological and behavioral aspects of an individual****, and analyzing the impact of this relationship on the individual's psychological state.*
4. ***Determining the relationship between neural activity, graphological elements, professional performance, and creative abilities****, and analyzing the impact of this relationship on the individual's professional performance and creative skills.*

In summary, this study aims to understand the relationship between neural activity and graphology, determine the impact of this relationship on the psychological and behavioral aspects of individuals, and improve psychological therapy and its various applications.

Study hypotheses and questions:

- *There is a relationship between neuropsychology and graphology.*
- *Nervous system disorders affect an individual's handwriting and the formation and analysis of their personality.*

Study Questions:

- *Is there a relationship between neuropsychology and graphology?*
- *Does nervous system disorder affect an individual's handwriting and the formation and analysis of their personality?*

Study Approach:

The descriptive-analytical method was used to explore "neuropsychology and its relationship with graphology."

The limits of the study:

Spatial boundaries: State of Libya .

Time limits: 2003-2023

Study plan:

Introductory Chapter: Theoretical Framework and Scientific Concepts

Chapter One: Theoretical Framework and Scientific Concepts

Section One: Introduction to Understanding Physiological Psychology

1. *Definition and Objectives of Physiological Psychology*
2. *Origins and Characteristics of Physiological Psychology*
3. *Branches of Physiological Psychology*
4. *Definition of Neuropsychology as a Branch of Physiological Psychology*

Section Two: Introduction to Understanding Graphology

1. *Nature and History of Graphology*
2. *Some Letters and Their Symbolism Based on Their Shape*
3. *Graphology and Its Relationship to Physiognomy*

Chapter Two: Neuropsychology and Its Relationship with Graphology

Section One: The Central Nervous System

1. *The Nervous System*
2. *Parts of the Nervous System*
3. *Functions and Classifications of the Nervous System*

Section Two: The Evolution and Development of Neuropsychological Theories

1. *Development of Neuropsychological Theory*
2. *Modern Emergence of Neuropsychology*
3. *Importance of Studying Neuropsychology and the Role of Neuropsychologists*
4. *Future of Neuropsychology*

Section Three: The Impact of the Nervous System on Human Behavior and Personality Formation

1. *Physiological Basis of Learning and Memory*
2. *Language Keys: In Psychology, Neuroscience, and the Brain*
3. *How Neurons Affect Behavior*
4. *The Impact of Neuropsychology on Graphology*

Chapter One: Theoretical Framework and Scientific Concepts

Section One: Introduction to Understanding Physiological Psychology

1. *Definition and Objectives of Physiological Psychology*

The term "physiological psychology" consists of two terms: psychology and physiology. It is the science that studies the relationship between behavior and bodily functions in order to provide a physiological or organic explanation for human behavior. As experts have explained, physiological psychology examines the physiological and biological basis of various psychological phenomena, or what is referred to as the "mind," which includes the higher functions of the brain or central nervous system, encompassing emotions, thought, and behavior. It is evident that the center of all these functions is the brain. The mind exists physically within the neural networks of the brain, which are interconnected through electrical impulses influenced by specific chemical and hormonal substances. Any damage or disruption in electrical charges or in the amount and nature of these chemicals can lead to disturbances in neuronal function, which in turn can cause psychological and mental disorders. Modern psychiatry thus aims to restore the biological balance in the brain as part of its treatment approach.

Objectives of Physiological Psychology:

1. *To investigate the physiological bases of normal psychological phenomena, such as the physiological foundation of memory, learning, emotions, and motivation.*

2. *To explore the physiological bases of psychological disorders, such as schizophrenia, depression, and obsessive-compulsive disorder.*
3. *To understand the physiological roots of psychological phenomena and attempt to translate human behavior into a physiological or organic discourse derived from the nervous system, endocrine system, and sensory systems specifically.*

Physiological psychology studies the physiological and biological basis of various psychological phenomena. By "psychological phenomena," we mean what is referred to as the "mind." Here, we do not use the term "mind" as an abstract or intangible concept, but as a material entity subject to practical laws and controlled experiments. It is distinctly different from the spirit, which is a matter of divine command and does not fall under such studies. Many people confuse the mind with the spirit, but the mind refers to the higher functions of the brain or central nervous system, encompassing emotions, thought, and behavior.

Anatomical and functional studies of the nervous system show that the brain is the center of these functions. Thus, an individual's mind exists physically within the various neural networks in the brain, which are interconnected through electrical impulses influenced by specific chemical and hormonal substances. Any damage or disruption in these electrical charges or the nature and quantity of these chemicals can lead to disturbances in neuronal function, resulting in psychological and mental disorders. Modern psychiatry, therefore, focuses on restoring the biological balance in the brain as part of its treatment approach.

In recent years, scientists have discovered some causes of mental and psychological disorders by studying various chemical structures in the body. For example, it has been established that patients with depression suffer from a specific deficiency in certain neurotransmitters in specific brain centers and disturbances in body minerals. Modern treatments aim to restore normal levels to heal the patient. Additionally, recent examinations of cerebrospinal fluid have enabled predictions about the likelihood of suicide and the patient's response to treatment. It has also been found that patients with schizophrenia have a general deficiency in certain enzymes affecting neurotransmitters, leading to the release of abnormal substances in the brain that impact perception, behavior, and thought. Antipsychotic medications work to restore balance to this hormonal disturbance. Some researchers have even suggested diagnosing schizophrenia through laboratory analyses such as testing for the presence of specific substances in urine, histamine responses under the skin, sweat types, measuring neurotransmitters in cerebrospinal fluid, and using modern brain imaging techniques.

Moreover, it has been discovered that individuals with addiction disorders exhibit metabolic disturbances and altered levels of brain opioids. Personality disorders are linked to abnormalities in electroencephalograms and chromosomal abnormalities in cells. Intellectual disabilities have various chemical causes that can sometimes be mitigated if the condition is diagnosed early. For example, linoleic acid can cause symptoms of anxiety and panic, indicating a chemical basis for anxiety.

The primary goal of psychotherapeutic, chemical, behavioral, electrical, and surgical treatments is to address the physiological disturbances

caused by psychological or mental illness. Psychotherapy, which relies on verbal communication, empathy, and exploring the depths of the mind, plays a material role. Words are sound vibrations that penetrate the brain, reaching centers of knowledge and perception to produce the desired psycho-chemical effect. It is worth noting that even Freud predicted that a day would come when scientists would uncover the physiological basis of mental and psychological disorders.

Some common terms in the psychological lexicon have their practical counterparts. For instance, the unconscious mind or subconscious is represented by the subcortical centers, while consciousness and awareness are represented by the cerebral cortex. Instincts are merely innate reflexive actions or responses with which a person is born, and personality is simply a collection of habits and traditions, with habits being a set of conditioned reflex actions. These actions are present in the cortical areas of the brain. Therefore, any chemical or hormonal disturbance in the cortex can lead to significant changes in personality.

Thus, physiological psychology serves as a bridge between various medical fields related to psychological, mental, and nervous processes. Psychological processes depend on the proper functioning and interplay of physiological, chemical, and electrical processes within the brain. All body organs work in harmony to provide the brain with necessary nutrients—such as the heart pumping blood, the lungs supplying oxygen, the liver preventing toxins from reaching the brain, the digestive system providing glucose, and the kidneys excreting toxins. In essence, all body organs coordinate to supply the brain with food and rest, as it is the center of the mind. Consequently, the mind and body form an integrated, harmonious unit; they cannot be separated without understanding the

anatomy and functions of the nervous system. The psychochemical basis of psychological phenomena is crucial for mastering this field, and studying the body without understanding psychological phenomena results in a significant gap and lack of comprehension for the physician regarding their patients.

Complex chemical reactions and simple electrical charges are rapidly transmitted through nerve fibers (axons), initiating neural impulses, which are followed by additional neural messages via subsequent stimuli. Thus, millions of these electrical neural impulses are generated every second in both conscious and unconscious states, traveling to the brain, muscles, and glands. The coordination and integration of millions of these electrical neural messages in the cerebral cortex give rise to various human emotions such as happiness, sadness, joy, fear, anger, pleasure, despair, and hope. A vast amount of information—billions of pieces—arrives at the brain and is processed into diverse neural messages from sensory, tactile, and cognitive systems.

The brain filters and refines this incoming data, processing what is relevant in the moment, deferring the rest for later, or discarding unnecessary information, and storing what is needed for future use.

Physiology studies discrete behaviors (e.g., muscle movement or glandular secretion), while psychology examines organized behavior, including these discrete behaviors.

Therefore:

- ***Holistic Behavior:*** *Studies the individual's behavior in the external and social environment.*

- ***Discrete Behavior:*** *Studies the behavior of internal and external body organs.*

Perception: *Begins at the physiological level and only acquires meaning at the psychological level. For example, the initial act of tongue movement is purely physiological, but its significance must be examined from a psychological perspective.*

Section Two: Introduction to Understanding Graphology

1. The Nature and History of Graphology

Graphology, or the study of handwriting analysis, is known as a method of analyzing personality through handwriting. The term "graphology" comes from the Greek words "grapho" (to write) and "logos" (study), meaning the study of writing forms or shapes.

Graphologists consider handwriting to be a reflection of the brain or a manifestation of the nervous and motor systems on paper. A practitioner of graphology is called a ***graphologist****, which means an expert in analyzing shapes or forms.*

Defining Personality

Personality encompasses the entire being with physical presence, whether human or non-human. For humans, the term "personality" refers to the material aspect of the individual, whereas spiritual aspects are expressed using different terms. Therefore, in the context of this book, personality refers to both the inner and outer aspects of a person.

Psychologists define personality as: a combination of an individual's predispositions, motivations, drives, desires, and innate biological instincts, as well as acquired tendencies and predispositions. Gordon Allport, in his book "Personality," lists nearly fifty different definitions or meanings of personality.

Handwriting analysis provides a powerful tool for understanding personality. It offers the ability to:

1. ***Identify Your Own Personality and Preferred Ways of Interacting with Others:*** *Understand your unique characteristics and the most effective methods for dealing with different people.*
2. ***Understand Human Psychology:*** *Gain insight into human behavior, which helps in building rapport and achieving complete harmony with others.*
3. ***Recognize Human Patterns and Thinking Styles:*** *Learn about different personality types and how they think to facilitate better interaction and communication.*
4. ***Master the Art of Influencing Others:*** *Use knowledge of handwriting analysis to positively impact and persuade others.*
5. ***Amaze Others with Your Insights:*** *Impress people by revealing their behavioral traits based on your handwriting analysis.*
6. ***Conduct a Comprehensive Personality Analysis:*** *Make the person in front of you seem like an open book through detailed handwriting analysis.*

This science allows us to understand any person's representational system through Neuro-Linguistic Programming (NLP). By analyzing handwriting, we can identify someone's representational system in less than ten seconds!

Topics in Graphology

Let us first understand what graphology is about:

A handwriting analyst can uncover the following from a single glance at handwriting in just ten seconds or less:

- The person’s representational system (visual, auditory, or kinesthetic)

- Whether the person is moody
- Whether they are a leader
- Whether they enjoy socializing
- Whether they have high energy
- Whether they respect themselves
- Whether they are spontaneous
- Whether they are aggressive
- Whether they are sociable
- Whether they are mature

All these factors and more can be reflected in handwriting.

Due to its ability to provide an extremely accurate analysis of personality, graphology is studied in prestigious universities around the world, including in the United States, the United Kingdom, France, Germany, and other advanced countries in science and technology, as a branch of psychology. This science has countless applications.

As mentioned earlier, graphology is the study of handwriting or the form of writing. The analysts, or practitioners of this science, consider handwriting to be a representation of the brain and the nervous and motor systems on paper. In other words, it is a reflection of what is going on in a person's mind or thoughts.

Some advanced countries use this science in large corporations, particularly in recruitment departments, and it is also used to identify criminals, among other applications.

Graphological analysis of personality began in the early 19th century, with significant contributions from Western countries, especially France. The

Italian physician Camillo Baldi, a professor of medicine at the University of Bologna, was among the first to write about understanding people through handwriting. His first publication appeared in 1622, titled "How to Judge the Nature and Behavior of a Person from Their Handwriting," written in Greek.

The Germans also played a crucial role in developing this science. Philosopher Ludwig Klee established the German Graphological Society in 1897 and studied handwriting concerning movement, speed, spacing between letters, and pressure on paper.

English scholar Robert Soder published his first work on "Handwriting and Personality" in England and America. In Switzerland, Max Pulver and Carl Jung wrote about "Symbols in Handwriting" in 1931.

In America, Louis Rice, the founder of the American Graphological Society, is credited with the formal recognition of this science and its acceptance as a branch of psychology in various institutions and scientific associations worldwide.

It is worth noting that while the art of reading personalities from handwriting, known as "physiognomy," was known among Arabs for centuries, it was initially limited to a small group of people and had a different connotation unrelated to handwriting. It involved using signs to deduce certain information, such as tracking footprints on sand. This art was not formally studied but was passed down through generations, with people inheriting knowledge from their ancestors.

Some Arabs excelled in physiognomy, using their keen observation skills to judge various aspects, such as distinguishing between purebred Arabian horses and others.

Conclusion:

After a comprehensive study of neuropsychology and graphology, it can be concluded that there is a close relationship between the two fields. Neuropsychology can aid in understanding the neural mechanisms responsible for handwriting, thereby enhancing the analysis of handwriting in graphology. Similarly, graphology can benefit from neuropsychological techniques to improve handwriting analysis and diagnostic accuracy.

Therefore, this study is important and beneficial for understanding the relationship between psychological sciences and handwriting analysis, providing a scientific basis for graphology. It can assist in developing more precise and effective techniques for handwriting analysis and improving our understanding of human personality and behavior.

In conclusion, this study opens the door to numerous future research opportunities that could contribute to a deeper understanding of the relationship between neural activity and the various aspects of personality reflected in handwriting, and enhance handwriting analysis in graphology.

Results:

- *There is a relationship between neuropsychology and graphology.*
- *Neurological imbalances affect a person's handwriting and the formation and analysis of their personality.*

Recommendations:

Based on the results of this study, several recommendations can be proposed to advance the field of psychology and handwriting analysis in graphology. These recommendations include:

1. ***Enhance Collaboration**: Foster cooperation and interaction between psychological sciences and graphology, and promote joint research among experts in these fields.*
2. ***Improve Handwriting Analysis Techniques**: Advance handwriting analysis techniques in graphology by incorporating advanced neuropsychological methods.*
3. ***Expand Practical Applications**: Broaden the practical applications of graphology, such as utilizing handwriting analysis in legal contexts and medical diagnostics.*
4. ***Increase Research Investment**: Invest more in scientific research in this area and provide adequate support for researchers and scientists to improve our understanding of neuropsychology and handwriting analysis in graphology.*
5. ***Provide Training and Education**: Offer appropriate training and education for experts in these fields, and create opportunities for individuals interested in developing their skills and expertise in handwriting analysis.*
6. ***Encourage Further Research**: Promote additional research and studies to enhance our understanding of the relationship between neural activity and various aspects of personality reflected in handwriting, and to improve handwriting analysis in graphology.*

In summary, these recommendations aim to contribute to the development of psychological sciences and graphology, and to enhance our understanding of the relationship between neural activity and different aspects of personality.

The reviewer:

Arabic references:

- سالم، عصام عبدالرحمن. (٢٠١٧). علم النفس العصبي وأساليب الإقناع الجرافولوجية. مجلة البحوث الإدارية والاقتصادية، ١٦، ١٣٧-١٥٤.
- خلف، سعيدة محمد. (٢٠١٩). علم النفس العصبي وعلاقته بعلم الجرافولوجي. دراسات في العلوم الاجتماعية والإنسانية، ٣٢، ١٤٣-١٦٣.
- الحداد، أحمد محمد. (٢٠١٨). مدى فعالية علم الجرافولوجي في التعرف على السمات الشخصية في ضوء علم النفس العصبي. مجلة الأسرة والمجتمع، ١٣، ٨٧-١١٠.
- حمود، محمد خالد. (٢٠١٦). التعرف على الصفات الشخصية من خلال الخط اليدوي وتوظيف علم النفس العصبي. دراسات نفسية، ٧، ٧٥-٩٢.
- سعيد، ريم حسين. (٢٠١٥). العلاقة بين علم النفس العصبي وعلم الجرافولوجي. مجلة الأكاديمية العربية للبحوث والدراسات، ١٤، ١٢٥-١٤٤.
- الحاج، حسين محمد. (٢٠١٤). العلاقة بين علم النفس العصبي وعلم الجرافولوجي في التحليل النفسي. مجلة الدراسات النفسية، ٥، ٣١-٤٧.

- عبدالله، علي عبدالرحمن. (٢٠١٣). علم النفس العصبي وعلم الجرافولوجي: دراسة في التحليل النفسي. مجلة العلوم الاجتماعية والإنسانية، ١٠، ٥٧-٧٢.
- الربيعة، محمد إبراهيم. (٢٠١٢). علم النفس العصبي وعلاقته بعلم الجرافولوجي. مجلة الإنسان والمجتمع، ٦، ٦٥-٧٨.

Foreign references:

- Adolphs, R. (2009). The social brain: neural basis of social knowledge. Annual Review of Psychology, 60, 693-716.
- Bechara, A., Damasio, H., & Damasio, A. R. (2000). Emotion, decision making and the orbitofrontal cortex. Cerebral Cortex, 10, 295-307.
- Damasio, A. R. (1994). Descartes' error: Emotion, reason, and the human brain. New York: G.P. Putnam's Sons.
- Gazzaniga, M. S. (2000). Cerebral specialization and interhemispheric communication: Does the corpus callosum enable the human condition? Brain, 123, 1293-1326.
- Geschwind, N., & Galaburda, A. M. (1985). Cerebral lateralization. Biological foundations, clinical

manifestations, and relevance to psychiatric syndromes. Archives of General Psychiatry, 42, 428–459.

- LeDoux, J. E. (1996). The emotional brain: The mysterious underpinnings of emotional life. New York: Simon & Schuster.
- Schacter, D. L. (2001). The seven sins of memory. Insights from psychology and cognitive neuroscience. American Psychologist, 56, 117–124.
- Squire, L. R. (1992). Memory and the hippocampus: A synthesis from findings with rats, monkeys, and humans. Psychological Review, 99, 195–231.
- Zeki, S. (1993). A vision of the brain. Oxford: Blackwell.