

Neurological and Neuropsychological Insights into Modern Art: Exploring the Interplay between Brain Function and Contemporary Creativity

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Abstract:- This research explains further detail on the connection between modern art and neuropsychological and neurological disorders, concentrating on how artist's mental health problems influence their creativity. Using the qualitative approach such as a survey and face to face interview, we identified the varying perspectives related to the evolution of art including its relationship with mental health. This study suggests that neurological disorders may have something to do with an artist's art pieces as they portray the depth of emotions and uncommon perspectives that an ordinary person cannot see. It also reveals the central idea for understanding the connection between the disabled mind of an artist and their art. This study also explores the understanding and appreciation of modern art.

Keywords:- Neurology, Neuropsychology, Modern Art.

I. INTRODUCTION

➤ *Understanding Disorders and the Way they Effect an Artist*

From Van Gogh to Giorgio de Chirico, many famous painters had neurological disorders that led them to have such exquisite paintings, which in return surged them in the art world to become known worldwide. Those artists were often referred to as the “sacred disease,” and for such an artist, their creative behavior would often be designated as a madman’s behavior, of which their work would be said to have been born in an abnormal state of mind (Huang, 2019). Understanding the brain and the various types of disorders and how they affect the perspective of a person in seeing things gives one an insight into how an ordinary artist created an extraordinary piece of art that was later taught in schools and universities globally. In 2007, the UN reported, “Up to 1 billion people, nearly one in six of the world’s population, suffer from neurological disorders, from Alzheimer and Parkinson disease, strokes, multiple sclerosis and epilepsy to migraine, brain injuries and neuroinfections, with some 6.8 million dying of the maladies each year.” This report explains the immense percentage of people who suffer from disorders worldwide, and it takes a true artist to take advantage of that disorder and highlight it in their art. However, in the 19th century, it was enigmatic to distinguish such disorders, and the person would be considered a lunatic for the art pieces that they would do.

To further interpret, an example of an artist who suffered from many disorders was the great Dutch artist Van Gogh; he suffered from various neurological illnesses his entire life, some of which remain unknown (Bhattacharyya and Rai, 2015). While some historians, researchers, and even his doctors thought that Van Gogh had epilepsy, others thought Ménière's disease was affecting him. Conversely, other historians believe that Van Gogh was compelled to amputate his right ear to receive respite from bothersome tinnitus, a side effect of Ménière's illness. Van Gogh developed an addiction to the alcoholic beverage absinthe, which is known to cause xanthopsia (Bhattacharyya and Rai, 2015). An article published by the U.S. National Library of Medicine wrote that it was unlikely that Van Gogh "would have outlasted extended periods of digitalis levels high enough to induce xanthopsia." Another theory suggests that the yellow halos in Starry Night may be connected to his glaucoma. The condition, which results in a darkening of the cornea, could have caused him to perceive circular halos around sources of light. Since this was a perception of reality, it is also how he depicted it in his painting. Van Gogh gave a vision of how he saw the world and applied it to his paintings, such as The Bedroom. Over the years, art has evolved in several ways, but unfortunately, it has lost some of its value. Modern art has become less detailed and more simplistic, often consisting of just a few lines, circles, or splashes of paint on a canvas. Some artists consider these minimalistic pieces to be art. However, this shift in artistic style may suggest a lack of depth or insight, and it represents a momentous change in the art world and the possibility of an increase in neurological disorders.

➤ *Statement of the Problem*

Prior researchers conducted their research around painters, musicians, composers, philosophers, and novelists, and only on famous old artists that lay in the 19th century in Europe. They have generalized the topic; thus, there is limited research found detailing such disorders and no research that discusses the neurology and neuropsychology behind modern art and artists of the 20th and 21st centuries.

➤ *Objectives of the Study*

This study aims to accumulate details behind the neurologically eccentric connections between the mind of disordered modern artist of the 21st century and their art, along with how their creations further helps them in displaying their emotions and revealing not only aspects of their inner world but their motives as well. Moreover, this

research aims to dig deeper into the neuropsychological link of the mind and art as well as include more details of the gradual shift of modern art in the 21st century.

➤ *Research Questions*

- How can art heal the mind of a disordered artist and dive into the depths of one's soul and capture their true emotions and desires?
- How is it possible for one's mind to be linked with art in a neurological and neuropsychological way?
- How has the significant shift in modern art affected how it is viewed?

➤ *Significance of the Study*

During the 19th century, certain artists faced issues of being mistreated due to their disorders not being taken into consideration. Several of the artists who had disorders were thought to have diseases or sicknesses. No matter how many ways a number of disordered artists attempted to defend themselves against these assumptions, none of the ways worked aside from their connection with art. Disordered artists implemented their inner emotions and thoughts into their creation as their unique way of portraying how they felt. Therefore, this was known to be one of the reasons for the significant beginning behind the connection between the mind and art.

➤ *Structure of the Study*

The first part of the topic explains the understanding of disorders as well as exemplifies how they can affect the minds of artists. It continues to transition by providing the statement of the problem, which is how researchers focused on 19th century artists including how there are no studies that focus on disordered artists of the 21st century. The study later proceeds to reach the objectives of the study along with the research questions and lastly, the significance of the study.

The first part of the second chapter of the research will provide deeper information about 21st century modern artworks in addition to presenting historical context for each art piece. In spite of that, the other part of the chapter will include the historical timeline of modern art and deliver the outcomes of whether or not has modern art modified positively or negatively yet also adding how its gradual shift over the few centuries, affected it.

The third chapter talks about the idea of the first objective in chapter two but instead also providing distinct aspects. One of them being the artistic creators of the art works.

The fourth chapter will introduce and be the final destination for this study's journey. It will include the process and conclusion of the whole research. Plus, it will supply an overview of all the four chapters combined.

II. LITERATURE REVIEW

This chapter will explore the neurological and neuropsychological perspectives on painters of the 19th century and their art, beginning with defining the definitions of neurology and neuropsychology, then delving into details about each painter by mentioning their neurological and neuropsychological disorders and relating them to how it had affected their art pieces to become great and unique. This chapter will also cover the gaps that researches have not yet covered and discussed.

➤ *Neurology*

Within the field of medicine, neurology focuses on the examination, identification, and management of conditions affecting the neurological system. According to Merriam-Webster, "A branch of medicine concerned especially with the structure, function, and diseases of the nervous system." Neurology is a complex field of medical science that delves into the intricate workings of the nervous system, including the structure, function, disorders, and treatment options related to the brain, spinal cord, peripheral nerves, and their connections (Dr. Mandal, 2023). It examines the dynamic interplay between neurons, synapses, neurotransmitters, and various cellular and molecular components, explaining the mechanisms underlying sensory perception, motor function, cognition, and behavior (Dr. Mandal, 2023). Neurology combines various disciplines, such as neuroscience, anatomy, physiology, pathology, pharmacology, and clinical medicine, to study a wide range of neurological conditions. Neurologists use a variety of diagnostic techniques, including imaging studies, electrophysiological assessments, and neurological examinations, to understand the complexities of neurological disorders, from degenerative diseases like Alzheimer and Parkinson to stroke, epilepsy, multiple sclerosis, and other conditions affecting the nervous system (Koutsky and Bruce, 2021). The field is constantly evolving through ongoing research, developing innovative treatments, medications, and therapeutic interventions to enhance the understanding and management of neurological conditions, intending to improve patient's quality of life (Koutsky and Bruce, 2021).

➤ *Neuropsychology*

Envision understanding why certain people behave the way they do after getting access to the secret job of the brain and how it takes control and influences it's hosts in some way. Fortunately, all of these elements can be found in Neuropsychology. With it being among the different aspect in the field of science, providing combined information from neuroscience and psychology, Neuropsychology is the study of how complex the brain can be and how it is the link between the human nervous system and human behavior. This includes thoughts and emotions. It further examines the structure of the brain and the overall functioning of it. Neuropsychology helps in the understanding of how even the tiniest change or damage in the brain can influence the thinking, feelings, emotions, behavior, and functions of any person. In spite of all of that, Neuropsychology can as well help in apprehending not only in how the brain can be after being affected by diseases or disorders, but also how gives

some sort of understand on how the brain can recover or at least get used the affects of disorders, diseases, or even injuries. Neuropsychology can help recover or improve any person's life with the solutions and strategies it provides within its meaning.

➤ *Neurological Disorders*

Disorders are a complex and significant aspect in the life of a human, as they are the main reason for the sudden actions or emotions of a person (American Psychiatric Association, 2013). They are defined as a disruption in the normal functions of the body of a human of which the cause can be indefinite and subjective (Martin,2023). According to Dr. Yongxing Zhou in 2019, the five most common neurological disorders are, firstly, headaches which are one of the most common disorders worldwide, they include a variety of various kinds of headaches, such as cluster headaches, tension headaches, and migraines. Common conditions that can cause recurring headaches are high blood pressure, infections, temporal arteritis (Inflamed blood vessels, in and around the scalp), and tumors. Secondly rated are strokes which affect more than 795,000 Americans each year and are when a person experiences damage in the brain as a result of arteries leading to and within the brain becoming impaired (Zhou,2019). After strokes come seizures, they are defined to be the changes in the electrical activity of the brain and affect about one in every one hundred Americans. Then comes the Parkinson disease, this disorder is classified as a nervous system disorder that tends to affect movement. It commences affecting people around the age of sixty, and the symptoms gradually get inferior over time (Zhou,2019). Finally, and most importantly dementia, it is known to be an umbrella diagnosis that describes a group of diseases, including Alzheimer, which may cause the brain of a human to fail. Dementia is most likely to happen as a person age and leads to a continuous loss of brain tissue increasingly more likely as you age, leads to continuous loss of brain tissue, which can affect the behavior of a person, emotions, memory, perception, and thinking (Zhou,2019).

➤ *Neuropsychological Disorders*

Disorders develop and are shown in numerous ways for each person. They appear in unusual ways and some of them are even claimed to be neuropsychological. Neuropsychological disorders are disorders that mentally affect a person, disrupting the normal patterns of their emotions, thoughts, or behavior. It also impacts the functions and structure of the brain. There are many commonly neuropsychological disorders that are or is spreading in every human being. One of the most common ones, according to the World Health Organization, is Alzheimer. Alzheimer disease is known to be a disorder that mainly affects a person's memory. Alzheimer can get to elevated levels of damage and can extremely wipe out someone's memory completely. Alzheimer disease is really common, that around 60-70% of people suffer from it worldwide (WHO, 2020). Another common neuropsychological disorder is attention-deficient/hyperactivity disorder (ADHD). ADHD goes deep and is a disorder that affects how a person can think or act. According to the American Psychiatric Association, around

7.5% in total of both adults and children globally, are diagnosed with ADHD (APA, 2013).

➤ *Relating the Disorders of Painters to their Paintings.*

Every human being has some type of disorder within them, and it affects them in diverse ways. However, each disorder differs from another, especially in the way it tends to affect a person. Many artists suffered from several types of neurological disorders, which gave them an advantage in creating exquisite art pieces that made them known for centuries (Cool,2017). These artists are from the 19th century, originating in Europe from various countries, and some of them, like the famous painter Claude Monet, are well-known. Claude Monet, also known as the father of impressionism, was born on November 14, 1840, and was one of the most important artists that had left a mark in the world. Monet was the progenitor of French impressionist painting, and the most creative and persistent performer of the doctrine of painting movement, of what a person perceives in front of nature, particularly while painting outdoors in landscapes. His artwork Impression, Sunrise is the source of the term Impression (*Claude Monet Gallery*, n.d). Claude Monet employed color more perfectly than any painter in history. He would return to the same location hundreds of times in an obsession with catching every nuance of color and shade for his renowned pond and water lily paintings, and even other great painters were amazed with the results. According to a quote by Paul Cézanne, "Monet is only an eye—but my god, what an eye,"(Kean,2022). Later on in life, Monet developed cataracts in 1912, which is when the lens of the eye becomes cloudy, and this is the part of the eye that helps focus on light (*National Eye Institute*, 2023). Developing such a condition in the eyes of Monet, he began to go blind painfully and slowly. Monet was devastated by the realization that he would have to give up painting soon; to him, life without painting was nothing at all. These thoughts led him to deepen his depression, as Monet was suffering with such a disorder before his illness.

Monet included a portrait of his future wife, "Camille," in 1867. Throughout her life, Camille posed for many of his paintings, acting as his inspiration (Calabrese,2018, S-76a). After being married, they went through a difficult financial period when their first son, Jean, was born. Monet was so depressed during this time that he tried drowning himself in the Seine River in 1868 in an attempt to end his life (Hajar,2016). This did not stop Monet in processing painting and took advantage of that, due to his condition (cataracts) it had affected his vision, which altered the way he perceived colors and shapes, leading him to the create paintings with more abstract and blurred quality, such as his series of water lilies, and during times of melancholy or depression, the work of Monet often reflected a darker or more subdued palette (Insights success, n.d). For example, he may have used muted colors and more subdued brushstrokes to suggest reflection or emotional depth. It is important to remember, though, that Monet's surroundings and the way light and nature acted had a noteworthy influence on his artwork as well. He painted landscapes as well as other scenes that piqued his interest even during depressive episodes, frequently turning to his work as a coping mechanism (Kean,2022).



Fig 1 (Nymphéas by Claude Monet, 1916-1919, Encyclopedia Britannica)

Another famous painter that suffered from depression was Vincent Van Gogh, he was a post-impressionist and was born on March 18, 1853 (Britannica,2023). Depression and other mental health issues plagued Vincent van Gogh, which had a significant impact on his artwork. He battled a number of mental health conditions throughout his life like Schizophrenia, Bipolar Disorder, and Borderline personality disorder (BPD), which resulted in times of severe emotional upheaval and instability (Grohol and Dibdin, 2022). His artwork frequently depicts these internal conflicts and mental instability. One way to interpret Van Gogh's use of vibrant colors, expressive brushstrokes, and tumbling, dynamic compositions is as a visual depiction of his emotional condition. His paintings may have darker tones and more

frantic brushstrokes during depressing situations, whereas brighter colors and more harmonious compositions may be seen during hopeful or peaceful moments. His well-known piece "The Starry Night" is a good illustration (Wolf, 2001). Painted at a turbulent time while he was in an asylum, the artwork depicts a night sky full of whirling stars and motion, signifying the instability in his own mind. Famous words from Van Gogh include "I am seeking, I am striving, I am in it with all my heart," (*Excellence Reporter*,2020). He used art as a way to process and communicate his feelings, giving his inner turmoil a release. In spite of his difficulties, his art nevertheless has a powerful emotional impact on viewers worldwide, demonstrating the close relationship between the human condition and the arts (Wolf, 2001).



Fig 2 (The Starry Night by Vincent van Gogh, 1889, Encyclopedia Britannica)

The Scream, a famous painting known worldwide, and is a fitting example of expressionism. Edvard Munch, a Norwegian painter, born on December 12, 1863, he was known for his splendid work in expressionism and is the painter of *The Scream*. Edvard Munch was a prolific and deeply tormented artist whose subjects included religious aspirations, sexual liberty, and chronic sickness as aspects of human mortality (The Artstory, n.d). Through works with vibrant colors, semi-abstractness, and enigmatic subject matter, he conveyed these obsessions. Munch adopted the more graphic, symbolist sensibility of the influential Paul Gauguin after the tremendous success of French Impressionism. As a result, he became one of the most contentious and eventually well-known artists among a new group of continental Expressionist and Symbolist painters (The Artstory, n.d). Munch once said, “No longer shall I paint interiors with men reading and women knitting. I will paint living people who breathe and feel and suffer and love,” this quote perfectly summarizes his art and the symbolic meanings behind every art piece he had ever done, each piece has a story behind it however it is not a personal problem but a universal problem that human has gone through at least once in their lives. Throughout his life, Edvard Munch dealt with a number of personal challenges, including mental health problems that had a substantial impact on his artwork (Edvard Munch, n.d). During his early years, he experienced the losses of close family members, which had a significant effect on him. His own episodes of illness and emotional instability, along with

these terrible incidents, had a significant impact on the topics and aesthetic of his artwork. The investigation of Munch in human emotions, especially existential dread, despair, and anxiety, is what makes his work so distinctive (Britannica, 2023). It is thought that his experiences with anxiety disorders and even depression influenced the deep and highly charged emotional content of his paintings as he said, “For as long as I can remember I have suffered from a deep feeling of anxiety which I have tried to express in my art.” One of his most well-known pieces, “The Scream,” is sometimes read as a depiction of severe emotional upheaval and existential despair (Britannica,2023). Furthermore, it is believed that Munch's frequent themes of illness, death, and psychological discomfort are mirror images of his subjective experiences and inner conflicts. He captured the rawness of his feelings and mental state in his paintings with expressive brushwork, deformed forms, and vibrant colors (Graf,2021). Munch used his painting as a cathartic outlet, a way to vent and work through his inner torment. His capacity to capture strong emotional states struck a chord with viewers, confirming his status as a trailblazer of Expressionism—a movement that sought to use art to communicate feelings and subjective experiences (Noyes,2020). Although Munch's mental health is not definitively diagnosed, his personal writings and letters, as well as the topics and style of his artwork, strongly imply a connection between his emotional struggles and the powerful, emotive nature of his artistic expression (Graf, 2021).



Fig 3 (The Scream by Edvard Munch, 1893, Encyclopedia Britannica)

Going all the way back to the 18th century, the famous Spanish painter, Francisco Goya, born on March 30, 1746, was believed to suffer from a neuropsychological disorder that consisted of a series of strokes. His disorder not only impacted him, but some of his art pieces too which include one of his famous masterpieces “Black paintings.” When Francisco Goya painted “Black paintings,” his disorder

influenced him to create the painting with more emotions rather than details and precision as his other artworks. Another reason that might have led him to this decision was that, around the time he created the drawing, a period of darkness and isolation was occurring as well (G. C. Davison, 2008).

III. METHODOLOGY

➤ Chapter Overview Description of Data Methodology

Users may easily construct surveys, quizzes, and polls with Microsoft Forms, a flexible survey tool. Data administration and analysis are made easier by its interface with Teams, Excel, and PowerPoint, among other Microsoft applications. It provides a user-friendly experience with its simple interface, ready-made templates, and real-time collaboration tools. Strong security features are also offered by Microsoft Forms, guaranteeing compliance and data protection. All things considered, it stands out among survey platforms thanks to its accessibility, integration possibilities, ease of use, and security. That is why this platform was selected and was shown to be best fitting for such research (Microsoft Forms, n.d.). To achieve the desired outcomes, the survey targeted two generations one that ranged between 15-19 and the other that ranged between 40-47, then the survey was posted on Instagram and was sent to specific family members that differed in the age range. For the survey, the posted survey was to get an idea of how the majority thinks and believes as well as keep it confidential, however, for the survey that was sent to specific family members aged between 20-24 and 40-46, this was to be more precise and to get a better look of how certain people think when you know them. The Instagram profile that it was posted on contained only 111 followers but was enough to get the data needed.

Although not many responses were given, however, the responses were enough to obtain the information needed to be able to complete. An interview with Dr. Mayson Ashouri, a psychiatrist, was provided to support and strengthen the topic; she was asked the same questions as that of the survey nevertheless, her answers differed from the others as they were given scientific facts and research done as well as cases and studies done.

IV. RATIONALE OF THE STUDY

In addition to being the most practical way of data collection, the use of a survey questionnaire was perfect for the research atmosphere and setting. "Survey research is a unique way of gathering information from a large cohort. Advantages of surveys include having a large population and therefore a greater statistical power, the ability to gather large amounts of information, and having the availability of validated models," (Jones, Baxter, and Khanduja, 2013). Since respondents preferred multiple-choice questions, writing questions were limited to only further explaining their answers. Furthermore, basic inquiries with a restricted number of options inside predefined categories were necessary to gather data. The questionnaire was made available to willing participants without any restrictions or time limits, giving them flexibility and freedom of choice. Moreover, the survey limited its age group to 15-19 and 40-47 and limited its geographical outline to the United Arab Emirates to get a closer look at the surroundings and get to understand daily faces. Overall, the purpose of creating a target group was to precisely address the study topic.

V. CONCLUSION

This chapter covered the description of the data, the methodology, the purpose of the study, and the analysis process. The study's primary goal was to investigate how neurological and neuropsychological disorders have affected modern art and how it has taken a shift from complex paintings to more simple and basic ones. The survey was done in order to get a view on what people think of the effects of such disorders on paintings and whether or not it has an effect, targeting two different generations to get full insight, provide more support, and have different views on the topic.

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