

Social Media and Dopamine: Studying Generation Z and Dopamine Levels

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ABSTRACT

The study investigates what dopamine is and the symptoms of fluctuating dopamine to establish whether Generation Z's increased use of social media has affected their dopamine levels. Research is conducted on 200 Generation Z respondents to assess media utilization. In addition, the outcomes of this study are compared to similar data to examine if there are indicators of social media usage affecting Generation Z's dopamine levels.

Introduction

Dopamine levels worsen as social media usage becomes more prevalent and advances throughout the modern world. The first social network launched in 1997, but the rise of social media began in the early 2000s, resulting in an integral part of life for billions of individuals. Recent statistics reveal that 58.4% of the world's population uses social media, meaning 4.62 billion people. Undisputedly, the social media culture is raising Generation Z. In fact, 93% of Generation Z are social media savvy, and 66% consider it a vital part of their lives. Since social media is in the lives of many Generation Zoomers' is it safe to conclude that these individuals manifest excessive or sparse dopamine levels? Moreover, the long-term effects that social media and dopamine has on an individual permanently.

Overview of Dopamine

Human development and a variety of biological processes depend heavily on neurotransmitters. Dopamine is a monoamine neurotransmitter playing an essential role in the cardiovascular and central nervous system. The brain produces dopamine through the substantia nigra, ventral tegmental area, and hypothalamus. Dopamine is a hormone associated with pleasure and a component of the body's reward system. Nigrostriatal, mesolimbic, mesocortical, and tuberoinfundibular are the major dopaminergic pathways of the brain. The mesolimbic path is responsible for dopamine's best-known functions, satisfaction and reward. The ventral tegmental region is where the mesolimbic route first arises (VTA). The VTA is a nucleus well-supplied with dopamine covering the brain's center and delivers dopaminergic action potentials to the nucleus accumbens reward pathway (NAc). The nucleus accumbens is where dopamine predominantly perpend sensations of gratification and reward. Consequently, as an individual encounters gratifying impulses, dopamine messages signal from the VTA to the NAc, creating positive psychological feelings that incentives behavior.

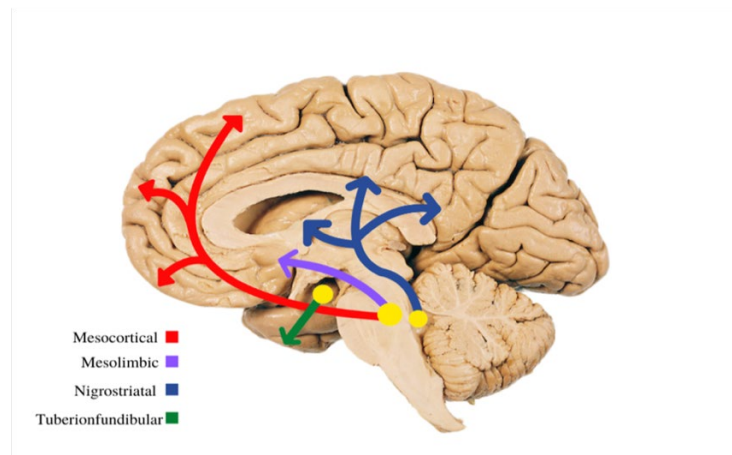


Figure 1. The Dopaminergic Pathways. A visual representation of where the pathways begin and end in the human brain.

Dopamine Levels

Health and survival require sustaining the NAc through dopamine management. Maintenance of regulated dopamine levels is fundamental due to the function's dopamine is responsible for neurologically and physically. For instance, cognitive function, lactation, emotional state, motivation, pleasure, and sleep are just a few of the many other necessary roles. However, high dopamine levels can lead to ADHD, obesity, addiction, sleep deprivation, and heart failure. In contrast, low dopamine levels can cause depression, attention deficit, and the development of diseases such as Parkinson's disease, restless leg syndrome, and schizophrenia.

Natural Dopamine Versus Unnatural Dopamine

Dopamine is crucial because it affects every part of a person's behavior and life, but individuals must be conscious of how to procure this neurotransmitter correctly. Natural dopamine is the most innocuous approach without developing an addiction or experiencing a problem. Various methods exist for producing natural dopamine and sustaining it:

1. It is necessary to acquire a significant amount of sleep daily. Research has found evidence that lack of sleep suppresses some dopamine receptors in your body. Ultimately, preserving quality sleep helps humans receive natural dopamine and sustain dopamine levels.
2. Any lifestyle needs a healthy and balanced diet. Eating healthy increases and maintains dopamine levels. Consuming foods high in amino acids is recommended for attaining and sustaining natural dopamine levels. Specifically, the amino acid tyrosine because it also makes dopamine! Foods like soy products, almonds, eggs, lima beans, and fish are just a few of the many foods that have tyrosine, leading to natural dopamine production and levels.
3. Studies show that people who exercise regularly are happier and live longer. Exercising activates the brain's reward system making humans feel an increased sense of joy and motivating the individual to exercise again. Progressively, if an individual consistently partakes in exercise, it revamps the reward system, enhancing the amount of dopamine in the body and naturally offering more accessible dopamine receptors.

Because of how dopamine is developed and released it, I will refer to it as unnatural dopamine. Unnatural dopamine comes from unhealthy sources:

1. Drugs trigger the dopamine system, causing addiction from the euphoric sensation produced by the activation of dopamine in neurons and the cardiovascular system. So, drugs such as morphine, cocaine, nicotine, alcohol, and amphetamine cause extreme dopamine levels. The result inhibits neurons from shutting off the dopamine signal causing aberrant activation of the reward circuits in the brain.
2. Unhealthy food habits such as eating saturated fats and processed foods can give an individual a sense of pleasure through the dopamine system, possibly leading to addiction and binge eating.
3. Technological advances activate the brain's dopaminergic pathways artificially, including on social media. Social media can be a digital drug and can become compulsive. The validation of a like, text, DM, or watching multiple videos in less than a few seconds to minutes causes an individual sense of pleasure, impelling the individual to check social media often, scroll, and be distracted, which can lead to social media addiction due to the building of dopamine receptors.

In conclusion, dopamine is an essential molecule due to the psychological and physical functions it provides that enable a human to endure life. Humans are vulnerably susceptible to illnesses and developmental issues if dopamine is aberrant. Dopamine rewires comportment as to how it is accrued and explaining why it is critical accumulating moderate amounts of dopamine rather than levels that are too high or too low. Dopamine deficiency or surplus can either provide undesirable quandaries such as addiction and depression or avail people live more salubrious, longer, and more fulfilling lives.

Tracking Dopamine Levels

Despite the efforts of neuroscientists, there are not many reliable tools available for measuring dopamine levels. However, scientists have lately applied a range of molecular neuroimaging to uncover fluctuations in dopamine levels through measuring the distribution and density of dopamine throughout task completion. This neurotechnology is called a positron emission tomography (PET) camera or scan.

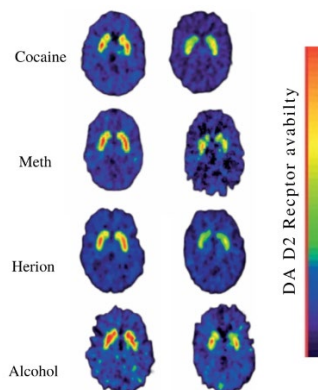


Figure 3. Dopamine D2 Receptors Are Lower in Addiction. An example of a PET scan utilized to compare the brains of individuals with addiction and those under control. (Addicted on the right, and under control on the left.)

Generation Z's Social Media Usage Correlating with Dopamine Levels

Generation Z is among the first to have access to smartphones and social media at an early age because of being born into a technologically advanced world. There are disparities in social media consumption when observing Generation Z to previous generations. In comparison to other generations, Gen Z uses social media more frequently for up to 3 hours on average. Snapchat, Instagram, and TikTok are the most popular forms of social media for Generation Z. In fact, 86% of teens who are part of Generation Z regularly use TikTok and Snapchat.

According to the Pew Research Center, 54% of adolescents in the United States would find it difficult to give up social media, and data also reveals that teen girls would have more difficulty giving up social media compared to teen boys. Additionally, Generation Z prefers watching entertaining content over communicating with friends on social media because it offers time-fillers and distractions. Generation Z spends 7.2 hours per day watching videos, mostly on social media platforms like TikTok, Snapchat stories, and Instagram reels (Vogels et al., 2022). With an attention span of just eight seconds as opposed to millennial's twelve seconds, Generation Z is impacted negatively by these short-form films on social media by lowering mental acuity and impairing the capacity to think and control emotion, a sign of low dopamine levels.

Furthermore, several studies have connected significant factors of mental disease to social media due to the production of low or high dopamine levels. Generation Z is more prone than any other generation to attract and suffer from mental health issues such as depression and anxiety. According to the Centers for Disease Control and Prevention, suicide deaths among people aged 10 to 24 increased by 57.4% between 2007 and 2018.

To conclude, statistics prove social media use has increased numerous indicators of unstable dopamine levels for Generation Z, including the decrease of an attention span, increased mental health issues, and suicide rates.

Methodology

Research Aim and Approach

The aim of this study is to evaluate whether social media is detrimental to Generation Z's dopamine levels through conducting an online examination and using prior corresponding data as evidence to make connections.

Research Design

Data from both the quantitative and qualitative areas were analyzed using a mixed method approach. The process surveys 200 Generation Z respondents to create statistics that assist in proving the study's central assertion using the opinions and responses of the participants as well as the knowledge obtained.

Sample

A sample of 200 respondents who fit into the Generation Z category was studied. With an estimated 60% of participants being men and 40% being women (120 men and 80 women), these 200 respondents ranged in age from eleven to nineteen and in diverse group of whites, African Americans, and Hispanics that live in Illinois.

Instruments Used

The strategy utilized was to examine all 200 respondents through Snapchat discretely because I hypothesized it yields more efficient data than a posted questionnaire. Through Snapchat, the questions asked, 'What social media do you

prefer out of Instagram, YouTube, Snapchat, TikTok, and Twitter, if you make use of social media? and 'How long do you spend daily on those five social media sites?' This week-long questioning was documented on Google sheets and documents than processed into graphs for data.

Data Procedure Collection

A well-known social networking platform for Generation Z, Snapchat, was used to administer the questionnaire. 200 Gen Z respondents were chosen at random through text and asked if they would be willing to provide two anonymous answers. These two questions had some room for interpretation but were both closed-ended. After introducing the questionnaire, the non-responsive individuals decided they did not want to take part in the study since they mentally conceived it was a political survey. I hypothesized that asking the responders separately provided them more time to consider their answer as opposed to clicking a button on an online survey without giving it much thought, and through this, the respondents gave a more exhaustive explication of their decision as to why they utilize that particular network.

Results and Discussion

The process surveys 200 Gen Z respondents through Snapchat to discover their social media predilections among Snapchat, TikTok, Instagram, Twitter, and YouTube. 98 out of the 200 respondents preferred Snapchat over the other four networks, making it the most well-liked platform. TikTok is preferred by 43 people, while Instagram is preferred by 50, and only 7 prefer YouTube. Prior to Twitter, these social media preferences were mixed by gender. The two respondents who expressed that they relished Twitter are males. After determining the participants' preferred social media site, I sought to ascertain the average time spent on each of the five social media platforms by the 200 respondents in order to determine whether prolonged usage of social media impacts the brain's dopamine levels. Based on the data gathered, 85 respondents spend between 1 and 3 hours, another 85 spend between 4 and 7 hours, and up to 30 respondents spend 8 hours or more. Although the increase in Generation Z' s social media usage is undeniable, measuring dopamine levels without neuroimaging is challenging. Statistics would uncover both preexisting truths about social media and dopamine levels as well as potential findings if this study were conducted in a lab with the necessary technology to evaluate the 200 Generation Z responders.

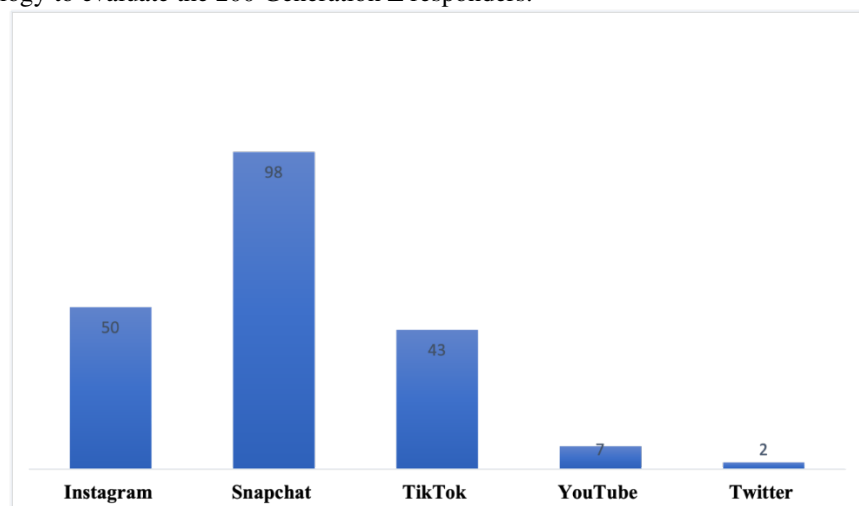


Figure 4. The Preferred social media of 200 Respondents. The bar graph represents the preferred social media network of the 200 respondents.

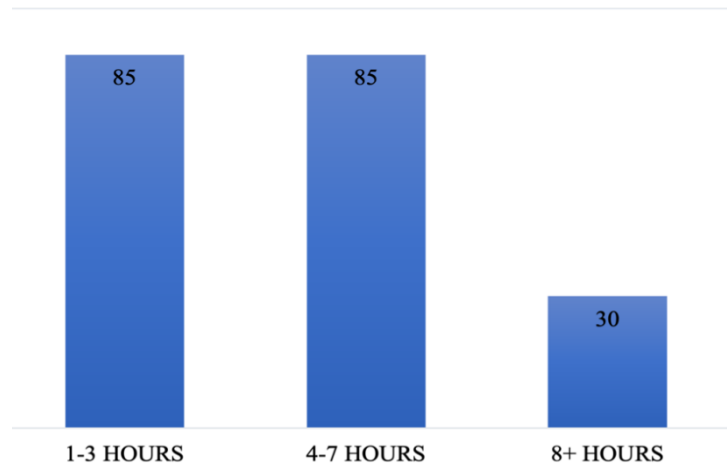


Figure 5. The Estimated Average the 200 Participants Spent on the Five Social Medias.

Limitations

I was unable to test the dopamine levels of the 200 respondents despite conducting proper research; nonetheless, statistics demonstrate that my hypothesis is correct based on the facts about social media and how it influences dopamine levels. Furthermore, the Generation Z respondents received no questions asking about low or high dopamine symptoms, and there was no use of neuroimaging technology to study the responder's dopamine levels.

Conclusion

In conclusion, the upward trends in social media usage are not a deception, particularly among Generation Z. If generation Z has the most mental health difficulties, addiction, and a shorter attention span, testing social media usage for low dopamine levels is accurate. Lessing social media usage can improve an individual's well-being, and consistently receiving this necessary molecule in reasonable amounts will help individuals stay healthy without issues.

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