

Associations Between Excessive Short-Form Video Consumption and Attention, Anxiety, and Compulsive Behavior in Social Media Users

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Abstract

This research paper states the prominent long-term impact of excessive reels or short video consumption via social media platforms as Instagram, TikTok, and Facebook, on dopamine regulation, attention span, and anxiety levels. These platforms offer rapid streams of stimulating content, often triggering instant gratification. The study hypothesizes that excessive reel consumption leads to altered dopamine regulation, reduced attention span, and increased anxiety over the long run. The study used surveys, attention span tasks, and standardized tools such as the State-Trait Anxiety Inventory (STAI), aiming at participants aged 12 to 40 years old, where they're divided into high and low screen time consumption groups, based on their daily screen time. Results showed compulsive reward-seeking behavior, lower attention spans at prolonged focus tasks, and higher anxiety levels among the high reels consumption group compared to the low reels consumption group. These findings aim towards a deeper understanding and raising awareness, particularly among the youth, of the extent of the impact of digital media on cognitive and well-being.

Keywords: [Addiction – Attention Span - Dopamine Regulation - Reels – Shorts – Social Media]

Introduction

Social media has become an essential part of modern life, with various social media platforms, such as Instagram, Facebook, and TikTok, providing continuous and ever-growing content.

Among these types of content are reels and shorts, which are videos that capture attention with a duration of 15 to 120 seconds. They are designed to be easily watched in a short duration, supplying the audience with brief entertainment.

Where these reels could be engaging and easier to target an audience, grab their attention, and address certain ideas to them, they could significantly affect dopamine

regulation, attention span, and anxiety levels, especially with excessive consumption.

This continuous exposure to rapid-fire content, such as shorts or reels, may lead to several alterations in the brain's reward system, especially when releasing dopamine, which affects some crucial emotions and feelings, such as motivation and pleasure. Moreover, contributing to anxiety and stress, these reels involve idealized images, lifestyles, appearances, and certain senses of humor that contribute to excess and regular social comparison on a repeated basis. Therefore, due to the widespread nature of this sort of content, there is no doubt that it's essential to understand the related

associations with mental health, self-esteem, and various brain functions.

Hypothesis:

This study explores whether excessive consumption of short-form video content such as; social media reels, TikToks, and YouTube Shorts is associated with the following:

Firstly, Compulsive reward-seeking behavior: such as difficulty stopping scrolling, reliance on short-form videos for mood improvement, or feeling numb or demotivated after extended use.

Secondly, reduced attention span: Constant switching between reels and shorts might impair prolonged attention, leading to great difficulty in focusing on tasks that require sustained concentration and communication.

Thirdly, increased anxiety and stress: Continuous social comparison and exposure to idealized lifestyles, and appearances in reels can increase feelings of inadequacy and inefficiency, contributing to higher levels of anxiety and unhappiness.

These hypotheses focus on identifying correlations rather than establishing direct neurological or causal relationships, given the self-reported and observational nature of the data.

Methodology:

The primary objectives addressed by the study are

- Examining the association between excessive social media reels use and behaviors linked to dopamine regulation.
- Investigating the relationship between reel consumption and attention span.

- Analyzing the effect of excessive reel consumption on anxiety levels and stress.

Variables:

- Independent Variable: Daily hours of social media reel consumption across platforms such as Instagram, TikTok, and Facebook.
- Dependent Variables: Dopamine Regulation: Behaviors associated with dopamine regulation: Since direct measurement of dopamine was not possible, compulsive behaviors were assessed through self-reports, including difficulty stopping scrolling, mood reliance on reels, and feelings of demotivation after use.

Attention span: Measured through cognitive tests such as the Continuous Performance Test (CPT), or the time taken to complete sustained-focus tasks.

Anxiety levels: Assessed using self-reported questionnaires like the State-Trait Anxiety Inventory (STAI) and subjective stress perception surveys.

Sample and Participants:

Sample Size: Depending on availability and preferences, 20 to 50 people are mainly targeted. The final sample size will be determined based on:

The response rate during the recruitment period, and the minimum needed number of participants to make the two groups statistically equal, which is at least 10 per group for independent t-tests.

If more than 40 eligible participants are available, priority will be given to balancing group sizes, which vary among high vs. low reel users, to strengthen comparative analysis. Participants were divided into two groups: those who consume social media reels for

over 3 hours per day (experimental group) and those who consume less than 1 hour per day (control group).

Inclusion Criteria: Participants aged 12-40, regular users of social media platforms (Instagram, TikTok, Facebook).

Exclusion Criteria: Individuals with a history of neurological disorders, diagnosed anxiety disorders, or other psychiatric conditions unrelated to social media consumption.

Data Collection Methods:

- Survey: Participants completed the survey regarding their regular social media use, reporting their own attention span and anxiety levels.
- Anxiety levels were measured using standardized tools like the State-Trait

Data Analysis

- Statistical Methods: Statistical tests were used to compare the differences in dopamine regulation, attention span, and anxiety levels among the individuals of the experimental and control groups to assess relationships between hours spent on Reels and dopamine changes, attention span, and anxiety levels.

Ethical Considerations

- Participants' identities and data were kept confidential throughout the study.
- Participants had the right to withdraw from the study at any time without any penalty.

Results:

The study compared two groups based on how often they watch reels daily, with the High Reels group, which had an average of more than 3 hours of watching reels, and the Low Reels group, which watched reels for less than 1 hour a day. Based on self-reported data collected during the survey that was carried out, the two groups distinctly differed in how anxious, focused, and compulsive they were.

Anxiety ratings, 1 representing low anxiety and 5 representing high anxiety, were higher in the High Reels group with a mean of 4.0 compared to 2.5 for the Low Reels group (Figure 1). This means significant associations between higher reel consumption and increased anxiety, compulsive use behavior, and lower sustained attention.

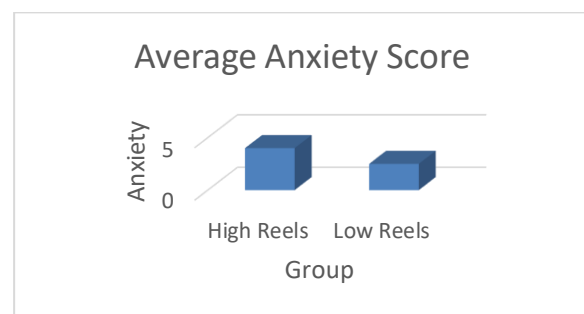


Figure 1. Average anxiety scores by group (High vs. Low Reel Users).

Sustained attention scores, rated 1 poor sustained attention through 5 good sustained attention, were lower in the High Reels condition at 2.0 and significantly different from the Low Reels condition with a mean of 4.0, indicating reduced ability for sustained attention over time (Figure 2).

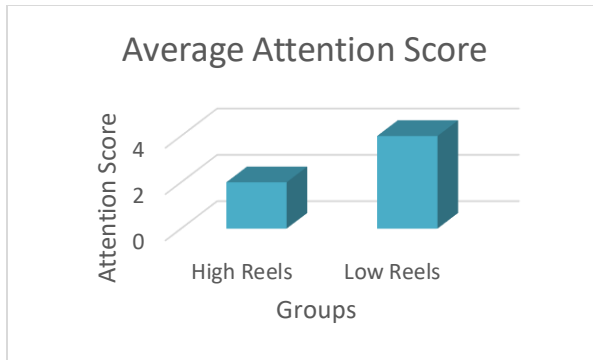


Figure 2. Sustained attention levels between High and Low Reel Users.

Furthermore, 70% of the High Reels group reported that they, compared to 20% in the Low Reels group, experienced compulsive use behavior, reflecting higher reward-seeking tendency and disengagement difficulty with reels in heavy users (Figure 3).

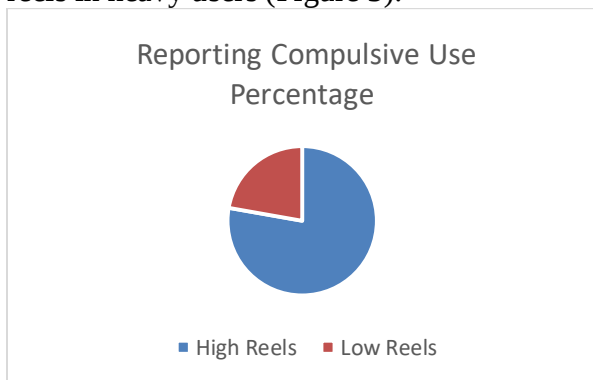


Figure 3. Percentage of compulsive use behavior in both groups.

These findings support the hypothesis that high daily reel use is associated with elevated anxiety, reduced attention span, and compulsive usage patterns. However, due to the cross-sectional nature of the study, individuals with pre-existing anxiety or attention difficulties may also be more likely to engage in excessive reel consumption.

Discussion

This study interpreted the associations among consistent consumption of short-video content, introduced as reels on several social media

platforms, for instance, TikTok, Instagram, YouTube Shorts, and self-reported compulsive behavior, attention spans, and anxiety levels. Findings suggest that individuals who engage more frequently with short-form content tend to report higher anxiety, lower sustained attention, and greater difficulty disengaging from social media platforms.

Genuinely, these apps are designed with algorithms that deliver personalized, rapidly changing content according to the user's privileges, to maximize engagement and get users involved within the platform. Each reel that pops up provides a small burst of satisfaction, which stimulates the brain's reward system, particularly in releasing dopamine [1].

Over time, this can lead to a phenomenon known as dopamine desensitization [2], where the brain requires more stimulation to achieve the same sense of pleasure or motivation. This may explain the continuous urge to keep scrolling, even after passing hours. Although the study does not directly measure neurochemical changes such as dopamine activity, it highlights behavioral patterns commonly associated with reward-seeking behavior. Reels and similar content types are designed to deliver brief, highly stimulating experiences that may reinforce frequent usage.

In terms of attention span, the continuous stream of short, fast-content may recondition the brain to prefer short bursts of information. This finding echoes previous studies, as Hilman (2024), which work on linking excessive social media use with reduced sustained attention, memory, and processing [3], showing a clear link between social media usage and decreased sustained attention in high school students. These findings support the idea that excessive reel

consumption relates with decreased ability to maintain focus on longer tasks [4].

Users may find it increasingly difficult to concentrate on tasks that require prolonged focus, such as reading or studying, contributing to low academic performance and lower productivity [5].

It is hypothesized that anxiety levels, including self-reported results from the State-Trait Anxiety Inventory (STAI), suggest a strong relation between frequent reel consumption and high anxiety. Users who spend more time on these platforms are more likely to report increased stress, insomnia, and other symptoms related to anxiety.

The individual's brain reward system is affected to a great extent by the positive validation and reinforcement, whether through likes, comments, or shares. Thus, elevating dopamine levels. Therefore, feeling numb, consumed, and unmotivated after excessive exposure to reels.

Furthermore, continuous reel watching makes it harder to concentrate on essential tasks that require sustained attention. So, there's a decline in attention spans among excessive social media users. In addition to usual exposure to idealized figures and consistent perfectionism through various platforms, which in turn raises anxiety levels and encourages some disorders. It was forecasted that participants who consume reels more than 3 hours daily would record higher anxiety scores on the STAI and lower attention span functioning on the Continuous Performance Test (CPT). These participants showed more compulsive instant reward-seeking behavior, as indicated by self-reported inability to log out of social media. Graphs and data tables were used to report comparisons between experimental and control groups.

Several factors contribute to the resulting outcome, including disrupted sleep patterns resulting from late-night scrolling, social comparison with idealized versions of others' lives, and the effects of constant distraction. Significantly, adolescents and young adults, whose brains are still in the development stage, are strongly vulnerable to these negative impacts.

However, it's important to recognize the limitations of this study. The data are correlational and cross-sectional, meaning we cannot conclude that high reel consumption causes anxiety or attention issues. It's equally plausible that individuals already experiencing anxiety or attention difficulties are more likely to engage with short-form content as a coping mechanism or distraction. Additionally, factors like sleep patterns, academic stress, or baseline mental health may act as confounding variables.

Moreover, it remains unclear whether excessive reel use causes anxiety and attention problems or if it's related to individuals with pre-existing disorders, and problems are exposed more to these outcomes. Future research should implement experimental studies that track brain activity and any significant change over time, incorporating neuroimaging to more precisely study how repeated exposure to short-form content influences brain function and mental well-being. In addition to including a more diverse sample size and controlling for confounding factors, to provide a more accurate approach.

Conclusion

This study highlights the associations between excessive use of reels and patterns of compulsive content-seeking behavior, reduced attention span, and increased anxiety levels. While the research does not establish a

direct causal relationship, the observed correlations point to potential mental health risks, particularly for adolescents and the young who are frequent users of platforms like TikTok, Instagram, and YouTube Shorts. With such findings, there is a need to promote digital well-being through practical strategies such as digital detox training, time management software, and mindfulness practice to facilitate healthier use of social media. Both school and community based educational interventions can also raise awareness of the potential cognitive and affective impacts of excessive reels use, enabling users to make better decisions about their social media use. Future studies should employ longitudinal and experimental designs to better understand the neurological and psychological effects of short-form content over time. By continuing to explore this area, researchers can contribute to a deeper understanding of how digital media shapes cognitive functioning and emotional well-being.

References:

1. Renu. TikTok Brain: Understanding the Impact on Modern Attention Spans. <https://renucounselling.ca/tiktok-brain/> (2024).
2. Douglas, K.S., Glenda, F.J. & Richard, P.D. Dopamine-dependent desensitization of dopaminergic signaling in the developing mouse striatum. *J. Neurosci.* 22, 9841–9849 (2002).
3. Medium. Social Media and the Effect on Our Attention Span. <https://medium.com/@ccalbr/social-media-and-the-effect-on-our-attention-span-6e25713eb5a3> (2023).
4. Hilman, S. This is Your Brain on Social Media: How Social Media Use is Changing Our Attention Spans. Preprint at ResearchGate (2024).
5. Rajeswari, N. & Vakkil, M. Scrolling and sustained attention: How social media influences sustained attention of high school students. *ShodhKosh J. Vis. Perform. Arts* 5 (2024).