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Cognitive Fatigue and Creativity in Art and Design Students: Insights from TikTok, Pinterest, and Other Social Media Platforms

TikTok'tan Pinterest'e: Sanat ve Tasarım Öğrencilerinde Farklı Sosyal Medya Platformlarının Bilişsel ve Yaratıcı Etkileri

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Abstract

Social media users overexert their mental resources by being exposed to a constant flow of information. This situation triggers cognitive fatigue symptoms such as difficulty in focusing, mental fuzziness and decreased decision-making capacity. Moreover, cognitive fatigue can negatively affect creativity by reducing the effectiveness of attention, flexible thinking and problem-solving skills necessary for creative thinking processes. The aim of this study is to reveal the effects of digital environments on creative potential by examining the relationships between social media use, cognitive fatigue and creativity in art and design students. The study, which was conducted with a quantitative and cross-sectional survey model, included 196 university students (122 female and 74 male) from the Faculties of Fine Arts and Design of universities in Turkey. The data were analyzed with SPSS 30.0 program. Firstly, descriptive statistical analysis was calculated. Accordingly, Pearson correlation, simple linear regression, one-way ANOVA, MANOVA and post-hoc Games-Howell test were used in data analysis. The findings showed that cognitive fatigue increased, and creative thinking decreased as the level of social media use increased. TikTok and Instagram users had the highest cognitive fatigue scores. Pinterest users were found to have the highest creativity levels. Furthermore, Instagram users also scored significantly higher on cognitive fatigue than YouTube users. In addition, cognitive fatigue and creativity levels of students using different social media platforms differ significantly. Social media use negatively explains a significant portion of the change in creativity. The findings point to the need to develop digital media strategies to preserve creative potential.

Keywords: Social Media, Cognitive Fatigue, Creativity, Art and Design Education

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Turkish Extended Abstract

Sosyal medya platformları, günümüzde bireylerin günlük yaşamlarının ayrılmaz bir parçası hâline gelmiş ve hem bireysel hem de kitlesel iletişim aracı olarak öne çıkmaktadır. Bir endüstri haline gelen sosyal medya platformlarının kullanıcı sayısı dijital teknolojilerin bireysel kullanıcılar arasında yaygınlaşmasıyla birlikte her geçen gün artmaktadır. Öte yandan sosyal medya yalnızca eğlence, iletişim ve sosyalleşmeye hizmet etmemektedir. Sosyal medya platformları ticari, endüstriyel ve bilimsel alanlarda da önemli bir araç olarak kullanılmaktadır. Birçok kurum ve kişi için söz konusu platformlar birer tanıtım aracı olmaktadır. Sosyal medya platformlarının kullanıcı kitlesini özellikle genç kuşaklar oluşturmakta ve bu bireylerin bilgiye erişim, iletişim, kimlik inşası ve kendini ifade etme süreçlerinde sosyal medya platformları ile yoğun etkileşim içerisinde olduğu görülmektedir. Sosyal medyanın çok boyutlu doğası, sosyal, kültürel, psikolojik ve bilişsel açıdan olumlu ve olumsuz farklı sonuçlar doğurabilmektedir.

Sanat ve tasarım öğrencileri, sosyal medyada aktif kullanıcılar arasında görülmektedir. Dolayısıyla bu grup Sosyal medyanın kendine özgü baskısını en yoğun şekilde hisseden gruplardan biri olarak öne çıkmaktadır. Bu öğrenciler bir yandan eserlerini görünür kılmak, tanınırlık kazanmak ve profesyonel fırsatlar elde etmek için sosyal medya platformlarında aktif kalma gerekliliği duymakta diğer yandan sürekli içerik üretme ve trendleri takip etme baskısı altındadır. Bu durum, öğrencilerin sıklıkla bilişsel yorgunluk yaşamalarına ve yaratıcı potansiyellerini tam olarak ortaya koyamamaları sonucunu doğurmaktadır. Öte yandan, sosyal medyanın sanat ve tasarım alanındaki yaygın kullanımı, sanatsal üretim ve tüketim dinamiklerinde önemli değişimlere yol açmıştır. Sosyal medya, sanatsal akımların ve trendlerin küresel ölçekte hızla yayılmasını sağlarken, sanatın algılanma ve değerlendirilme biçimlerini de dönüştürmektedir. Örneğin dijital kolaj gibi yenilikçi yaklaşımlar günümüzde daha görünür hâle gelmiş ve birçok sanatçı eserlerini dijital ifade yöntemleriyle yeniden harmanlayarak yeni üretimler ortaya koymuştur.

Bilişsel yorgunluk, uzun süreli zihinsel aktivite sonucunda ortaya çıkan ve motor veya bilişsel performansta düşüş ile karakterize edilen psikofizyolojik bir durum olarak tanımlanmaktadır. Bu süreç, bilhassa yorgunluk hissinde artış, görevi sürdürmede isteksizlik ve bilişsel performansta azalma ile kendini gösterir. Araştırmalar, bilişsel yorgunluğu prefrontal korteksteki bilişsel kontrol bölgelerinin aşırı kullanımı ile ilişkilendirmiştir. Bu durum, motivasyonel süreçler ile ilişkili olan yaratıcılığı olumsuz etkileyebilmektedir. Yaratıcılık ise literatürde insan düşüncesinin en karmaşık ve çok boyutlu yönlerinden biri olarak kabul edilmektedir. Dolayısıyla dijital teknoloji kullanımı ve bilişsel yorgunluk arasındaki ilişki modern araştırmaların önemli konularından biri olarak ortaya çıkmaktadır.

Bu çalışma, sanat ve tasarım öğrencilerinde sosyal medya kullanımı, bilişsel yorgunluk ve yaratıcılık arasındaki ilişkileri incelemeyi ve farklı sosyal medya platformlarının bu değişkenler üzerindeki etkilerini ortaya koymayı amaçlamaktadır. Ayrıca sosyal medya kullanımının yaratıcı üretim süreçlerine etkisinin açıklığa kavuşturulmasının, yalnızca akademik bilgi birikimi açısından değil, öğrencilerin dijital çağda yaratıcılıklarını sürdürebilmeleri açısından da değer taşıdığı düşünülmektedir.

Araştırma, nicel yöntemler ve ilişkisel tarama modeli kapsamında yürütülmüştür. Katılımcıların yaratıcı düşünme becerileri Bireysel Yaratıcılık Ölçeği ile öz değerlendirme yoluyla ölçülmüş, sosyal medya kullanım alışkanlıkları ve bağımlılık düzeyleri Sosyal Medya Bağımlılığı Ölçeği ve Beyin Sisi Ölçeği ile değerlendirilmiştir. Örneklem, Türkiye'deki vakıf ve devlet üniversitelerinin Güzel Sanatlar veya Sanat ve Tasarım Fakültelerinde öğrenim gören 196 lisans öğrencisinden oluşmaktadır (62,2% kadın, 37,8% erkek; yaş ortalaması = 20,5 ± 1,7). Çalışmaya katılan tüm öğrenciler devlet veya vakıf üniversitelerinde örgün eğitim görmektedir.

Verilerim IBM SPSS programı aracılığıyla analiz edilmiştir. Veri analizinde betimsel istatistiklerin ardından değişkenler arası ilişkiler korelasyon analizleri ile incelenmiş, bazı değişkenlerin diğerleri üzerindeki yordayıcı etkileri basit doğrusal regresyon analizleriyle değerlendirilmiştir. Analizler, bağımsız değişkenin bağımlı değişken üzerindeki etkisinin istatistiksel olarak anlamlı olup olmadığını ve modelin açıklayıcılık düzeyini (R^2) ortaya koymak amacıyla gerçekleştirilmiştir. Ayrıca sosyal medya platformlarına göre bilişsel yorgunluk ve yaratıcılık puanlarının farklılaşıp farklılaşmadığını incelemek için tek yönlü varyans analizi (ANOVA) yapılmıştır. Varyans homojenliği Levene testi ile sınanmış ve ihlal edildiği için post-hoc analizlerde Games-Howell testi kullanılmıştır.

Korelasyon analizine göre, sosyal medya kullanımı ile bilişsel yorgunluk arasında pozitif ve yüksek düzeyde anlamlı bir ilişki bulunmuştur ($r = .94$, $p < .001$). Bilişsel yorgunluk ile yaratıcılık arasında ise negatif ve orta

düzeyde anlamlı bir ilişki gözlenmiştir (r = -.58, p < .001). Sosyal medya kullanımı ile yaratıcılık arasında da negatif yönde anlamlı bir ilişki saptanmıştır (r = -.55, p < .001). Regresyon analizinde bilişsel yorgunluğun yaratıcılığı anlamlı ve negatif yönde yordadığı görülmüştür (B = -0.373, SE = 0.038, β = -0.580, t = -9.91, p < .001).

Betimsel istatistikler, TikTok (M = 64.45, SD = 15.23) ve Instagram (M = 62.42, SD = 14.82) kullanıcılarının en yüksek bilişsel yorgunluk puanlarına sahip olduğunu, Pinterest kullanıcılarının ise en yüksek yaratıcılık ortalamasını gösterdiğini ortaya koymuştur. Instagram kullanıcılarının, YouTube kullanıcılarından anlamlı derecede daha yüksek bilişsel yorgunluk puanı aldığı saptanmıştır (p = .026). Pinterest kullanıcıları, öz bildirimlerine göre en yüksek yaratıcılık puanına sahip olmuş ve bu fark TikTok ve X kullanıcılarına kıyasla belirgin görülmüştür.

Anahtar Kelimeler: Sosyal Medya, Bilişsel Yorgunluk, Yaratıcılık, Sanat ve Tasarım Eğitimi.

Introduction

Social media has become an integral part of individuals' daily lives and stands out as both an individual and a mass communication tool, today. People, especially younger, intensively use social media platforms for accessing information, communicating, constructing identity, and expressing themselves (Kaplan and Haenlein, 2010). However, the multifaceted functions of social media produce different cognitive and psychological outcomes. The constant flow of information, visual overload, algorithmic recommendations, and pressure to be visible can consume individuals' mental resources and increase symptoms of cognitive fatigue. This is epitomized in results such as distraction, difficulty concentrating, and decreased decision-making capacity (Sunil et al., 2022).

Art and design students are one of the groups that feel this pressure from social media most intensely. On the one hand, they feel the need to remain active on social media platforms to make their work visible, gain recognition, and obtain professional opportunities; on the other hand, they are under pressure to constantly produce content and follow trends (Peppler and Dahn, 2022). This emerging digital ecosystem conflicts with the dynamics of deep thinking, originality, and slow maturation that are at the core of the creative process. This situation carries the risk of students experiencing cognitive fatigue and being unable to fully realize their creative potential (Redifer et al., 2021).

Aim

The aim of this study is to examine the relationships between social media use, cognitive fatigue, and creativity among students and to reveal the effects of different social media platforms on these variables. This study is important in terms of contributing to understanding both the opportunities and risks of digital environments in the context of art education. Furthermore, it is believed that clarifying the impact of social media use on creative production processes is valuable not only in terms of academic knowledge but also in terms of developing strategies for students to maintain their creativity in the digital age.

Hypotheses:

H-1: There is a positive relationship between social media addiction scores and cognitive fatigue scores.

H-2: As cognitive fatigue levels increase, individual creativity scores decrease.

H-3: The social media platform used significantly differentiates the cognitive fatigue and creativity levels of art and design students.

H-4: Social media addiction negatively predicts individual creativity.

H-5: Cognitive fatigue differs according to platform type.

Framework

Social media is one of the most important tools in today's digital communication ecosystem. Kaplan and Haenlein (2010, p. 61) define social media as “a group of Internet-based applications built on the ideological and technological foundations of Web 2.0 that allow for the creation and exchange of User-Generated Content.”, Kietzmann et al. (2011, p. 241) explain social media using the “honeycomb” model. This model defines social media as tools that “use mobile and web-based technologies to create highly interactive platforms where individuals and communities share, co-create, discuss, and modify user-generated content” and defines social media as a structure consisting of seven functional building blocks: identity, conversations, sharing, presence, relationships, reputation, and groups.

Nicole and Boyd Danah (2013) emphasize that social networking platforms also have different natures within themselves. While subjectivity, individuality, and user profiles are prominent in some social media platforms, some social media platforms focus on communication and the public sphere.

There are perspectives that critically examine social media. Fuchs (2021) states that social media is not only a technological phenomenon but also a structure with social and political dimensions. Tuten (2023) defines social media as online communication, transmission, collaboration, and cultivation tools used by individuals and communities to share, co-create, discuss, and modify online content.

All things considered, it is seen that social media is a complex digital communication phenomenon encompassing various dimensions such as technological infrastructure, user interaction, content production, and social connections (Boyd and Ellison, 2007; Fuchs, 2021; Tuten, 2023).

Social media platforms have been examined by many researchers under different categories, taking various characteristics into account:

Firstly, Kaplan and Haenlein (2010) classified social media platforms into six categories based on their media richness and social presence levels: collaborative projects (Wikipedia), blogs and microblogs (Twitter), content communities (YouTube), social networking sites (Facebook), virtual game worlds (World of Warcraft), and virtual social worlds (Second Life).

Secondly, Kietzmann et al. (2011) evaluated social media platforms based on seven functional characteristics: identity, conversations, sharing, presence, relationships, reputation, and groups, noting that each platform embodies these characteristics to varying degrees.

Fuchs (2021) classified social media platforms according to their cognitive, communicative, and collaborative dimensions, addressing them within the framework of Web 1.0, Web 2.0, and Web 3.0 technologies. Smith et al. (2012) examined social media platforms in terms of user interaction, content type, network structure, and access features, noting that each platform has a unique ecosystem.

Lastly, Tuten (2023) divided social media platforms into four categories: social communities (Facebook, Twitter, LinkedIn), social publishing (blogs, YouTube, Instagram), social commerce (Yelp, Groupon), and social entertainment (gaming sites, Snapchat). This definition highlights that each platform serves different purposes and has different functional characteristics.

On the one hand, social media usage is gaining momentum both in Turkey and worldwide, particularly with the increase in the number of individual devices. According to Kemp's (2024) "Digital 2024: Turkey" report prepared for Datar portal, as of January 2024, there are 57.50 million active social media users in Turkey, corresponding to 66.8% of the country's population. The same report shows that the number of mobile connections in Turkey has reached 80.69 million, which is equivalent to 93.8% of the total population. According to research data from Statista (2024), the number of social media users in Turkey continues to grow and is expected to exceed 76 million by 2027. Globally, according to Kemp's (2025) "Digital 2025: Global Overview Report," the number of social media users worldwide has exceeded 5.24 billion, corresponding to 63.8% of the world's population. In the same vein, according to Kepios' (2024) analysis, 95.7% of internet users worldwide use social media platforms every month, regardless of age. Furthermore, the average daily social media usage time globally has reached 2 hours and 21 minutes (Datar portal, 2025). These statistics show that social media has become an indispensable part of daily life both in Turkey and around the world.

Social media does not only serve entertainment, communication, and socialization, today. Hence, social media has become an important tool for many commercial, industrial, and even scientific fields (Shanmugasundaram and Tamilarasu, 2023). For example, social media plays a very important role in art and design education today. It is known that social media's digital design processes encourage the development of students' autonomy and self-critical capacities in art education (González-Zamar and Abad-Segura, 2021).

Social media platforms have become an important tool, especially for artists to gain recognition in their independent fields. For instance, social media platforms allow artists to share their work on a global scale and reach audiences directly without traditional intermediaries. Having a digital presence has a significant impact on the careers of emerging visual artists in terms of branding, interaction, and access (Petrides and Vila de Brito, 2024).

DeWilde (2016) underscores that social media has become a method for sharing lesson ideas among art educators.

The widespread use of social media in the fields of art and design has led to crucial changes in the dynamics of artistic production and consumption. Digital platforms have radically altered the dissemination of artistic content and enabled the development of new artistic production paradigms. While social media facilitates the rapid global spread of artistic movements and trends, it also transforms the ways in which art is perceived and evaluated (Karagöl and Kaplanoğlu, 2022).

The digital transformation in industrial fields where creativity and cultural heritage are important, such as art and design, brings with it many new business models and opportunities as well as new challenges (Nasta, 2025).

Some researchers and artists claim that styles have evolved toward a more homogeneous structure over time (Alsaleh, 2024; Amin, 2024; Anand, 2024). Therefore, this situation was interpreted early on by theorists such as Bhabha (2012) and Pieterse 2019) as globalization leading to cultural hybridization over time. Current studies show that this hybridization is a transitional phase and that, in the long term, forms of expression are becoming increasingly similar due to the dominant influence of global media, technology, and consumer culture. As Tomlinson (2001) states in his theory of cultural imperialism, local and original artistic expressions are adapting to universal aesthetic codes with different concerns.

Tigre Moura et al. (2023) states that AI-supported artistic products have reshaped the concepts of artistic value and originality through technological tools. Furthermore, likes and follower statistics on social media platforms have changed the ways art is produced, consumed, and critiqued (Fekete et al., 2023). While this change contributes to the democratization of art, it also carries the risk of undermining artistic value. Therefore, the dual effect of social media on art expands opportunities for artistic expression and access on the one hand, while creating new challenges regarding the originality and depth of art on the other (Dönmez, 2025; Kırmızıgül, 2019).

Some researchers and artists share the view that social media has caused revolutionary changes in the contemporary art market, fundamentally altering the ways artists promote their work, and collectors discover artwork (Petrides and Vila de Brito, 2024). Additionally, one of the most important effects of social media platforms is that they offer opportunities for innovative artists who struggle to break into traditional art institutions to express themselves. In a study examining the link between digital asset management and the potential for developing a successful artistic career, some researchers emphasize that social media has significantly accelerated the development and dissemination of digital art forms (Petrides and Vila de Brito, 2024). On the other hand, some researchers admitted that social media has become not only a showcase for digital art but also a dynamic ecosystem where these art forms evolve, transform, and meet new audiences (Massi et al., 2020).

The multidimensional nature of social media has given rise to the concept of digital art over time. The conceptual origins of digital art, which today are encountered as an area where social media and art are intertwined, date back to the first half of the 20th century, particularly. Digital art, which began to emerge in the 1960s with the development of computer technology, was initially realized by computer programmers and mathematicians in the form of visualizing algorithms. However, the inadequacy of digital technologies and the lack of widespread individual use during this period limited the development of digital art (Grant, 2014; Paul, 2023).

In the second half of the 20th century, digital art took on a hybrid nature, with works produced using both analog and digital tools. After the 2010s, the use of artificial intelligence and machine learning technologies in art became widespread, and with the rise in popularity of NFT (Non-Fungible Token) technology in 2021, a new model of ownership and value for digital artworks emerged (Paul, 2023).

In the recent period, where many innovative approaches such as digital collage have become more visible, many artists have created new works by remixing their artistic heritage with digital expression methods (Gerdan, 2024). This has enabled digital art to reach large audiences independently on social media, alongside traditional art. Furthermore, digital art movements have emerged, creating a large audience interested solely in digital art. All of this has increased the relationship between art and social media. Being present on social media has become almost a necessity for many artists to be visible (Bramantyo, 2021).

Although, this transformation created by the digital age in the art world has created a two-way pressure, especially for art and design students and young artists, where social media use is more prevalent. On the one hand, these individuals feel compelled to maintain an active presence on social media to reach wider audiences, gain recognition, and seize career opportunities. On the other hand, they are under pressure to constantly produce content, adapt to algorithms, and follow digital trends. This issue causes them to spend a large part of the mental energy that should fuel their creative

processes on social media strategies, engagement analytics, and digital marketing techniques (Bishop, 2025; Petrides and Vila de Brito, 2024).

Artists which are particularly younger, and especially art and design students, are forced to constantly perform mentally to build their personal brands, make regular posts, manage follower interactions, and differentiate themselves from their competitors, in addition to their artistic production (Petrides and Vila de Brito, 2024). This multi-layered cognitive load manifests itself over time as difficulty concentrating, creative burnout, decreased decision-making ability, and cognitive fatigue (Shanmugasundaram and Tamilarasu, 2023).

Finally, the pressure to be constantly visible on digital platforms undermines artistic originality and depth, leading to a tendency to produce quickly consumed content, which depletes artists' mental resources and prevents them from fully realizing their creative potential. The deep thinking, introspective work, and slow maturation processes inherent in artistic production clash with social media's structure of instant gratification and constant demand for novelty, dragging young artists into a continuous spiral of cognitive fatigue (Petrides and Vila de Brito, 2024).

Cognitive Fatigue

First and foremost, cognitive fatigue is defined as a psychophysiological state that arises because of prolonged mental activity and is characterized by a decline in motor or cognitive performance (Behrens et al., 2023). Accordingly, this process is characterized by an increase in feelings of fatigue, reluctance to continue the ongoing task, and a decrease in cognitive performance (Pattyn et al., 2018). This condition often affects work and thinking performance (Van Cutsem et al., 2017).

Numerous studies can be found on the causes of cognitive fatigue. Cognitive fatigue has often been associated with pathological fatigue (Kuppuswamy, 2017). Besides that, Hockey, (2013) argued that cognitive fatigue is a problem of control management and addressed it within the framework of motivational control theory. Pattyn et al. (2018) emphasized that cognitive fatigue is a multifaceted construct.

Studies have linked cognitive fatigue to the overuse of cognitive control brain regions in the prefrontal cortex. The excessive load on the prefrontal cortex increases the cost of cognitive control and causes individuals to turn to actions that require little effort and provide instant rewards. Thus, this affects motivational processes and regulates behavior (Pessiglione et al., 2025).

Increased use of digital technology and the introduction of digital devices into our lives has led to the examination of the relationship between modern technology and cognitive fatigue. It is possible to find studies in literature that reveal a relationship between the use of digital technologies and cognitive fatigue. A study by Shanmugasundaram et al. (2023) indicated that constant exposure to digital stimuli leads to the depletion of cognitive resources. A similar result was observed in a study by Gregersen et al. (2023). In a study conducted with 59 university students during the COVID-19 pandemic, it was stated that intensive digital use is a significant factor in cognitive fatigue.

Hasan (2024) showed that digital multitasking causes changes in prefrontal cortex activity and cognitive fatigue. Chand et al. (2024) stated that interaction with digital interfaces creates cognitive load and causes a decline in mental performance over time.

Creativity

First of all, creativity is considered one of the most complex and multidimensional aspects of human thought. Numerous definitions of creativity can be found in the literature. Torrance (1988) defined creativity as “perceiving gaps, disturbing or missing elements, developing ideas about them, forming hypotheses, testing them, comparing results, and modifying and retesting potential hypotheses.” Amabile (2018) approached creativity from the perspective of novelty and functionality. Amabile defined creativity as “a product, idea, or solution produced by an individual or small group that is both novel (original, unexpected) and appropriate (useful, meeting task constraints).”

Csikszentmihalyi (1997) adopted a systemic approach. He defined creativity as “any action, idea, or product that arises from the interaction between a person's thoughts and the sociocultural context of a field, is accepted as new by that field, and is ultimately incorporated into the symbolic domain of a culture.” Sternberg and Lubart (1999) defined creativity as “the ability to produce original and appropriate work” and stated that creativity is a process evaluated both in terms of individual ability and social context.

On the one hand, it is evident that there is no single, universally accepted definition that applies to all domains, and that a full consensus on the concepts of creativity—as a multidimensional phenomenon—and creative thinking—as a distinct mode of thought—has yet to be reached (Ülger, 2024).

Creativity is widely accepted as a multidimensional construct; however, the ways in which it is measured vary considerably. While some studies evaluate creativity through performance-based tasks or expert judgments of creative products, others rely on self-report scales that reflect individuals’ own perceptions of their creative abilities. As noted in the literature, measures of creative potential do not always fully correspond to observable creative performance (Runco & Acar, 2012). Especially in art and design education, perceived creativity and actual design outputs may not fully overlap. In this study, creativity refers to students’ self-perceived creative potential rather than externally assessed creative performance.

Amabile's Component Theory of Creativity is a model that explains the fundamental components that constitute creativity and the interaction between these components. According to this model, creativity is defined as “the production of original and useful products, ideas, or solutions.” The theory highlights three fundamental components of creativity: domain-relevant skills; creativity-relevant processes; task motivation (Amabile, 2018).

Domain-relevant skills include technical knowledge, expertise, and abilities that a person possesses in their field of work. Creativity-relevant processes encompass cognitive and personality traits that support creative thinking, such as cognitive flexibility, risk-taking, and developing new perspectives. Finally, task motivation refers to an individual's intrinsic interest and passion for the task (Amabile, 2018).

This model emphasizes the powerful effect of intrinsic motivation on creativity. It also notes that extrinsic motivational factors can sometimes inhibit creativity.

J.P. Guilford's Divergent Thinking Model examines intelligence within the framework of the “Mind Structure Model.” In this model, he divides thinking styles into two categories: divergent’ and “convergent.” Convergent thinking involves logical and analytical thinking processes aimed at reaching a single correct answer, while divergent thinking involves generating multiple solutions to a problem,

looking at it from different perspectives, and making unusual connections (Childs et al., 2022; Guilford, 1967).

Guilford defined four basic components of divergent thinking: fluency (the ability to generate many ideas), flexibility (the ability to think in different categories), originality (the ability to generate unusual ideas), and elaboration (the ability to develop and enrich ideas). Runco and Acar (2012) noted that Guilford's model, which treated creativity as a measurable construction, laid the foundation for the development of subsequent creativity tests.

Guilford's model led to a significant shift in creative research. This model showed that creativity is not limited to artistic abilities but can be studied as a cognitive process. Kaufman and Beghetto (2009) state that Guilford's concept of divergent thinking still provides an important theoretical framework for understanding different levels of creativity.

The Triarchic Theory of Intelligence is a comprehensive model that addresses intelligence in three fundamental dimensions. Sternberg (1984) divided intelligence into three distinct components: analytical, creative, and practical intelligence. Analytical intelligence encompasses problem-solving, analysis, and evaluation skills; creative intelligence encompasses the ability to generate new ideas, discover, and use imagination. Practical intelligence refers to the ability to apply theoretical knowledge in real-world conditions, adapt to the environment, and solve everyday problems.

Sternberg's theory approaches creativity as a multidimensional structure and emphasizes the role of different types of intelligence in the creative process. Sternberg and Lubart, (1999) state that creativity is not only a talent but also a decision-making process.

Method

Research Model

This study was conducted within the scope of the correlational survey model, one of the quantitative research methods. The correlational survey model aims to reveal the level and direction of the relationship between variables. Since the research data was collected at a single point in time, the study is cross-sectional in nature. The model aimed to examine the relationships between social media addiction, cognitive fatigue, and individual creativity; it also aimed to determine whether there were significant differences in the levels of these variables according to the social media platform used.

Participation

The sample size was determined a priori using G*Power (v.3.1), ensuring sufficient statistical power for the planned analyses. Accordingly, the sample of the study consists of a total of 196 undergraduate students studying in departments affiliated with the Faculty of Fine Arts or the Faculty of Art and Design at private and state universities in Turkey. 62.2% of the participants were female (n = 122) and 37.8% were male (n = 74), ranging in age from 18 to 30, with an average age of (20.5 ± 1.7). All participants are enrolled in formal education. The students participating in the study are continuing their education in their second, third, or fourth year. Students who declared that they did not have any cognitive or psychiatric disorders were included in the study.

Tools

The study used the Individual Creativity Scale developed by Kaçay and Soyer (2022) to measure individuals' creative thinking skills through self-assessment; the Social Media Addiction Scale developed by Fırat and Barut (2018) and adapted into Turkish by Atik and Manav (2023) to assess social

media usage habits and addiction levels. (2018) Social Media Addiction Scale developed by Fırat and Barut to assess social media usage habits and addiction levels, and the Brain Fog Scale adapted into Turkish by Atik and Manav (2023). In addition, a demographic information form was presented to obtain information about the participants' gender, age, grade level, type of university they attended (private/public), and field of study. In this form, participants were asked to indicate the social media platform they most frequently used to share their own productions in the field of art and design and to follow content related to the field. The responses to this question were used as a categorical variable in the analysis to assess the impact of social media platforms.

Statistics Analysis

The SPSS 30.0 program was used for data analysis. Descriptive statistics were first performed, and the demographic characteristics of the participants and the general distribution of scale scores were examined. At this stage, the arithmetic mean, standard deviation, frequency, and percentage values of each variable were calculated, aiming to understand the general profile of the sample group.

Pearson correlation analysis was applied to determine the direction and strength of the relationships between the continuous variables included in the study. This analysis was preferred to reveal whether there was a linear relationship between the variables, and if so, whether this relationship was positive or negative and its intensity.

After determining the relationships between variables, simple linear regression analyses were performed to evaluate the predictive effects of some variables on others. These analyses were used to reveal whether the effect of the independent variable on the dependent variable was statistically significant and to determine the explanatory power of the model (R^2). The significance of the model was evaluated using the F test, and the reliability of the coefficients was interpreted based on standard error, t-statistic, and p-values.

In addition, a one-way analysis of variance (ANOVA) was performed to examine whether cognitive fatigue and creativity scores differed according to the social media platform used in the study. Prior to the analysis, the homogeneity of variances was tested using the Levene test. Since the results of this test were significant for both variables, the assumption of variance homogeneity was violated, and therefore the Games-Howell test was preferred in post-hoc analyses. The Games-Howell test was chosen because it provides reliable results when group variances are unequal and sample sizes differ. To determine whether platform types jointly affected cognitive fatigue and creativity, multivariate analysis of variance (MANOVA) was applied, and the homogeneity of variance-covariance matrices was assessed using Box's M test. After significant differences were detected in MANOVA, univariate ANOVA results were examined to determine which variables caused these differences.

Ethical Processes

"This study was conducted with the approval of the ethics committee obtained at the meeting dated 02.05.2025 (Meeting No: 2025/05)."

Findings

A total of 196 art and design students participated in the study. 62.2% of the participants were female (n = 122) and 37.8% were male (n = 74), ranging in age from 18 to 30.

The platforms participants used to follow current developments, news, and posts related to their field and to share their own work were distributed as follows: Instagram (n = 64), Pinterest (n =

33), TikTok (n = 42), YouTube (n = 29), and X (n = 28). It should be noted that although participants may use other platforms, the responses were given based on the platform where they produce the most content and make their artistic posts.

Table 1. Correlation Analysis Between Cognitive Fatigue, Creativity, and Social Media Use

	Social Media Use	**Cognitive Fatigue**	**Creativity**
Social Media Use	—		
Cognitive Fatigue	.941*	—	
Creativity	-.546*	-.580*	—

Note. **p** < .01*

According to the Pearson correlation analysis, a positive and highly significant relationship (r = .94, p < .001) was found between social media use and cognitive fatigue, while a negative and moderately significant relationship (r = -.58, p < .001) was found between cognitive fatigue and creativity. Furthermore, a negative and significant relationship was found between social media usage and creativity (r = -.55, p < .001). Accordingly, as the time spent on social media or the level of addiction increases, mental fatigue also increases significantly. Additionally, as cognitive fatigue increases, the total score obtained from the creativity scale decreases.

Table 2. Results of Simple Linear Regression Analysis on the Predictive Effect of Cognitive Fatigue on Creativity

Model	**B**	**SE B**	**β**	**t**	**p**
Constant	56.296	2.266	–	24.849	< .001*
Cognitive Fatigue	-0.373	0.038	-0.580	-9.905	< .001*

Note. **p** < .01*

A simple linear regression analysis conducted to determine the predictive power of cognitive fatigue on creativity found the model to be significant, F(1, 194) = 98.12, p < .001. The model explains 33.6% of the variance in creativity (R^2 = .336). Cognitive fatigue significantly and negatively predicts creativity (B = -0.373, SE = 0.038, β = -0.580, t = -9.91, p < .001). Accordingly, as the cognitive fatigue score increases, the creativity score decreases.

Table 3. Results of Simple Linear Regression Analysis on the Predictive Effect of Social Media Use on Creativity

	B	**Std. Error**	**β**	**t**	**p**
Constant	46.796	1.784	—	26.226	<.001*
Social Media Use	-0.183	0.025	-0.465	-7.310	<.001*

Note. **p** < .01*

According to the analysis results, social media usage is a significant predictor of creativity scores, F(1, 194) = 53.44, p < .001. The model explains approximately 21.6% of the variance in creativity (R^2 = .216). Based on the standardized coefficient (β = -0.465), there is a moderate and negative

relationship between social media usage and creativity. That is, as the social media usage increases, the creativity score decreases significantly. Each 1-unit increase in social media usage corresponds to an approximate 0.183-point decrease in the creativity score.

Table 4. MANOVA Results Regarding Cognitive Fatigue and Creativity Levels According to Social Media Platform

Test	Value	F	df	Error df	p	Partial η²
Wilks' Lambda	0.850	4.015	8	380	< .001*	.078

Note. **p** < .01*

A multivariate analysis of variance (MANOVA) was conducted to examine the combined effect of the social media platform on cognitive fatigue and creativity levels. The analysis found that the social media platform had a significant effect on the combination of dependent variables, Wilks' Λ = .85, F(8, 380) = 4.02, p < .001, η^2 = .078.

Univariate tests showed that the platform created significant differences in both cognitive fatigue (F(4, 191) = 5.35, p < .001, η^2 = .101) and creativity (F(4, 191) = 3.37, p = .011, η^2 = .066). According to descriptive statistics, TikTok (M = 64.45, SD = 15.23) and Instagram (M = 62.42, SD = 14.82) users had the highest cognitive fatigue scores, while Pinterest users (M = 37.88, SD = 9.07) showed the highest creativity average.

Table 5 *Cognitive Fatigue and Creativity Levels According to Social Media Platform: One-Way ANOVA Results*

Dependent Variable	SS	df	MS	F	p	η² (Partial)
Cognitive Fatigue	5142.49	4	1285.62	5.35	< .001*	.101
Creativity	1395.40	4	348.85	3.37	.011	.066

Note. **p** < .01*

The results of the one-way ANOVA indicate that the social media platform used has a significant effect on cognitive fatigue scores, F(4, 191) = 5.35, p < .001, η^2 = .101. According to the Games-Howell multiple comparison test results: TikTok users have significantly higher cognitive fatigue scores compared to both Pinterest (p = .014) and YouTube users (p < .001). Instagram users scored significantly higher on cognitive fatigue than YouTube users (p = .026). No significant differences were found in comparisons between Pinterest and X, Instagram and X, or TikTok and X.

There were also significant differences in creativity scores by platform type, F(4, 191) = 3.37, p = .011, η^2 = .066. According to the Games-Howell test results: Pinterest users scored significantly higher on creativity than TikTok users (p = .002). Pinterest users also had significantly higher creativity scores than X users (p = .038). No significant differences were found in other group comparisons.

TikTok and Instagram stand out with the highest levels of cognitive fatigue; TikTok mentally exhausts participants more than both Pinterest and YouTube. Pinterest users have the highest creativity levels; this difference is particularly pronounced compared to TikTok and X users. YouTube users have average values for both variables; they are the group with the lowest cognitive fatigue.

Discussion

Our study found a strong and positive relationship between social media use and cognitive fatigue (r = .94) (Table 1). This result is consistent with many studies in the literature (Świątek et al., 2023; Öksüz et al., 2026). For instance, Tian et al., (2025) pointed out that social media use can cause excessive cognitive load and stated that this can lead to psychological consequences such as emotional exhaustion and anxiety. On the other hand, they noted that these psychological consequences may play a mediating role in cognitive fatigue. A study with university students found that social media use causes cognitive fatigue (Opolska-Bielańska, 2025). Sunil et al. (2022) stated that there are many environmental and social factors behind this situation. Some studies have shown that this fatigue may increase due to increased social media use, especially during specific periods such as the COVID-19 pandemic (Islam et al., 2020; Pang, 2021).

The very high correlation between social media use and cognitive fatigue should also be interpreted cautiously, as overlapping behavioral patterns measured by the scales may partly contribute to this strength of association.

Our study found that cognitive fatigue significantly reduced creativity (r = -.58) (Table 1). The results of our study were found to be consistent with findings in the literature. Previous studies in the literature have also indicated that high cognitive load often negatively affects creative thinking performance. Accordingly, under high cognitive load, fluency and originality in creative thinking decrease significantly. This significantly affects creativity processes (Redifer et al., 2019; Redifer, 2021). However, the sample in our study consisted of art and design students. These students use more cognitive and emotional resources in their creativity processes compared to other students; therefore, becoming more susceptible to the negative effects of cognitive fatigue. Considering that previous literature has indicated that increased cognitive load is associated with lower performance in creative thinking tasks, the negative relationship observed in our study between social media use and creativity (r = -.55) appears to be linked to cognitive fatigue (Table 1) (Redifer et al., 2019, Redifer, 2021; Yuan et al., 2022).

Our study found that creativity systematically decreased as cognitive fatigue scores increased (B = –0.373; Table 2). This finding is consistent with the literature showing that performance is negatively affected in creative thinking tasks conducted under cognitive load. Past research indicates that increasing cognitive fatigue leads individuals to perceive their mental resources as more costly and limits fluency and originality in creative processes (Boksem and Tops, 2008; Van der Linden et al., 2003). The findings of our study are supported not only statistically but also by neurobiological mechanisms.

Furthermore, considering that numerous variables influence creativity, the fact that social media usage accounts for 21.6% of the variance is interpreted as a noteworthy finding. This finding reveals that social media is not merely a communication or sharing tool but has also become a decisive factor in individuals' creative production processes. Indeed, the new technologies and tools offered by social media platforms are transforming young people's online interaction and learning patterns, supporting creative production through collaborative production, digital media creativity, and peer evaluations (Peppler and Dahn, 2022).

Our research found that social media platforms had a 10.1% impact on cognitive fatigue and a 6.6% impact on creativity (Table 4). This finding suggests that different platforms can have different cognitive and creative effects on users due to their own content feeds, interaction formats, and usage

dynamics. TikTok and Instagram users had the highest levels of cognitive fatigue, while Pinterest users had the highest average creativity (Table 4 and Table 5). TikTok users experience significantly higher cognitive fatigue compared to both Pinterest and YouTube users ($p < .05$) (Table 5). This indicates that the dynamics of platforms have different effects on individuals' levels of cognitive fatigue. A study has shown that the differentiating effect of platform types on cognitive processes and creative outputs is evident not only in general social media use but also in the context of individual platforms. Research conducted on YouTube users reported that excessive consumption of YouTube content leads to a significant decline in sleep quality and is associated with notable impairments in cognitive functions. The study found that YouTube usage had a 49.6% effect on the Pittsburgh Sleep Quality Index and a 36.5% effect on the cognitive error scale, demonstrating that even a single platform can have powerful predictive effects on cognitive performance. This finding directly aligns with the differences observed in users' mental and creative outputs in our research (e.g., TikTok increasing cognitive fatigue or Pinterest supporting creativity) across different social media platforms. However, our study found that TikTok users experienced the highest cognitive fatigue. In this respect, our study is like Li et al. (2024). Li et al. (2024) states that short videos generally require low cognitive engagement and, by offering rapid, continuous stimulus changes, can pave the way for inattention and mental fatigue.

Constant stimuli change or exposure to repetitive stimuli can increase cognitive fatigue and lead to decreased performance, as reported by Ioannucci et al. (2023). This explains both the higher cognitive fatigue of students who spend more time on TikTok, and the higher cognitive fatigue levels of Instagram users compared to YouTube users ($p < .05$) (Table 5). The swipe function used to switch between short videos on TikTok and Instagram is thought to be a significant factor in this situation.

Our study found that Pinterest users had significantly higher creativity scores than TikTok and X users ($p < .05$) (Table 5). This finding can be explained by Pinterest's platform dynamics. The literature emphasizes that online environments that support creative thinking generally offer visual inspiration, curated content streams, and opportunities for individual discovery (Saputra, 2024). Pinterest's structure, based on visual collections, creates an environment that encourages artistic production and is based more on “incremental discovery,” allowing users to draw inspiration without mental exhaustion. These features provide an ecosystem that can nurture the creativity of art and design students. Therefore, Pinterest's structurally lower cognitive load and the artistic nature of its content are consistent with the high creativity scores obtained (Izadpanah, 2021; Polynczuk-Alenius, 2014).

On the other hand, YouTube users were found to have the lowest levels of cognitive fatigue and moderate levels of creativity (Table 5). At first glance, this finding seems to contradict the literature suggesting that YouTube may be more mentally taxing due to its wide variety of content and long viewing habits, but the nature of our sample group explains this result. It is thought that the art and design students who participated in our study used YouTube more for artistic education videos, workshop content, and long-format course materials. Indeed, it is known that YouTube plays an important role in the personal education of many people (Godwin et al., 2017). Therefore, although such content requires attention span, it provides a more structured cognitive experience rather than causing mental exhaustion because it is a source of learning and inspiration.

A possible explanation lies in how different platforms structure attention and content consumption. Short-form platforms such as TikTok are built around rapid context shifts and brief, continuously changing stimuli, which may encourage fragmented attention and surface-level processing. In contrast, YouTube’s long-form and tutorial-based content often requires sustained

engagement and goal-oriented viewing. Particularly in the context of visual communication design education, such structured and instructional content may support deeper cognitive processing, integration of knowledge, and reflective thinking. In this sense, YouTube may function not only as a consumption platform but also as an informal educational space that facilitates creative learning rather than contributing to cognitive fatigue (Godwin et al., 2017; Peppler & Dahn, 2022).

Additionally, it is known that short-form, fast-paced content is mostly consumed by students via TikTok and Instagram. These platforms' “swipe-through” algorithm causes constant distraction through rapid context shifts, thereby increasing cognitive fatigue (Harsanto et al., 2025). On the contrary, YouTube demands less fragmented attention through long-form content, which explains the low cognitive fatigue scores observed in our sample. Hence, it can be said that the content flow formats of platforms are decisive in cognitive and creative processes: fast-paced consumption-oriented environments increase mental load, while inspiration- and learning-based platforms support creative potential.

In light of this, our study found that social media use increases cognitive fatigue and negatively affects creativity. Platforms based on short-term and fast content consumption, such as TikTok and Instagram, were found to cause the highest levels of cognitive fatigue. In contrast, Pinterest was found to support creativity with its artistic and inspiring structure. YouTube users' low cognitive fatigue and moderate creativity levels can be explained by art and design students using the platform more for learning and production purposes. These results show that social media platforms affect cognitive and creative processes in different ways, not only based on usage time but also on content dynamics and user profiles.

Limitations and Future Directions

One limitation of this study concerns the measurement of creativity through self-report. The Individual Creativity Scale captures participants’ perceived creative potential rather than performance-based or product-based creativity. However, in art and design education, perceived creativity and actual creative outputs may not always overlap. Factors such as self-confidence, self-efficacy, and social comparison may influence how students evaluate their own creativity. Therefore, the findings should be interpreted as reflecting perceived creativity. Future studies could strengthen the validity of the results by incorporating expert evaluations of design products or performance-based creativity tasks.

Another limitation relates to the cross-sectional design of the study. Although regression analyses indicate predictive relationships, cross-sectional data do not allow for definitive conclusions about the direction of effects. It remains possible that intensive use of short-form platforms such as TikTok increases cognitive fatigue; however, it is also plausible that students who already experience higher levels of cognitive fatigue may gravitate toward passive, rapid-consumption content. This potential issue of reverse causality is inherent in cross-sectional and correlational research designs and limits causal interpretation. Longitudinal or experimental studies would provide clearer evidence regarding the temporal and directional nature of these relationships.

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Ethical Statement

In all stages of this study—from its planning and implementation to data collection and analysis—all rules specified in the *"Higher Education Institutions Scientific Research and Publication Ethics Directive"* were strictly followed. None of the actions defined under the second section of the directive, titled *"Actions Contrary to Scientific Research and Publication Ethics,"* were carried out. During the writing process of this research, scientific, ethical, and citation rules were observed, and no falsification or manipulation was made on the collected data. This study has not been submitted to any other academic publication outlet for evaluation.