

The role of a major social media platform on students' academic performance: Perception versus reality

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ABSTRACT

The social media landscape is constantly evolving; new platforms emerge, and existing platforms change their functionality. While a robust body of literature exists on the influences of social media on students' academic outcomes, most studies have failed to differentiate between specific social media platforms. Further, most research in this field focuses on how one variable (e.g., time spent on social media per day) relates to students' GPA, giving an incomplete picture of how social media relate to student outcomes. The current study aimed to (a) investigate the intricate relationship between social media usage, time spent on schoolwork, and academic performance in college students; (b) confirm the rise of TikTok use among college students; and (c) understand college students' perceptions of how their major social media platform influences their academic performance. Data were collected from a sample of undergraduate students in the USA (n=306). While the time spent on social media was negatively correlated with GPA ($r=-.16$, $p<.001$); time spent on schoolwork had no effect on GPA ($r=.03$, $p=.580$). Further, the time allocated to social media usage positively correlated with the time devoted to schoolwork ($r=.14$, $p=.020$), suggesting the pervasiveness of social media multitasking among college students. TikTok was the most commonly used social media platform, particularly by women. However, while TikTok-favoring students were more likely to think their GPA would be higher were they off social media, their GPA was not significantly different from other users who favored Snapchat and Instagram as their primary social media platforms, implying a discrepancy between student perception and reality. This may be because the TikTok videos are very short, thus one may watch a high number of them in a row and assume they have spent a long time on the app, which may have not been the case.

Keywords: social media, academic performance, social media multitasking, college students, perception, reality

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INTRODUCTION

Since the beginning of the twenty-first century, social media platforms (i.e., Facebook, Instagram, Snapchat, TikTok, Twitter, and YouTube) have served as venues for interaction among people worldwide. College students aged 18-22 are the first generation raised immersed in social media and tend to use them heavily. Given the thorough integration of social media into the lives of college students, many of these platforms cater towards the young audience. Young adults spend on average over 3 hours daily on social media (Ilakkuvan et al., 2019). At the same time, technological developments have dramatically changed the way college students learn, as communication and collaboration have become easier thanks to these tools (e.g., Lavidas et al., 2022; Tulubas et al., 2023). Applications such as Canvas and Outlook keep students checking their devices for educational content, but this constant online presence often leads to becoming sidetracked and going on social media sites. Given the ubiquitous presence of social

media in students' lives, the effects of social media use on student outcomes have attracted increasing attention from researchers (e.g., Karakose et al., 2022; Tulubas et al., 2023).

To date, most research in this field focuses on how one variable (e.g., time spent on social media per day) relates to students' GPA. This gives an incomplete picture of how the current social media landscape relates to student outcomes. This is because

- (a) social media use can create stimulating effects similar to addiction (e.g., Sherman et al., 2016);
- (b) social media addiction is linked to academic behavior change of students (e.g., Azizi et al., 2019); and
- (c) change in academic behavior (e.g., social media use during academic work) may also affect students' GPA.

Further, the social media landscape is constantly evolving, with new platforms emerging, and existing platforms changing functionality. Some social media platforms quickly gain popularity

among certain age or gender groups, while others fade away. As women tend to seek personal connections, they often form close relationships with others and define themselves by their successes to maintain relationships (Cross & Madson, 1997). Therefore, while social connection is a major factor across a range of social media users, it is especially important to women (Whiting & Williams, 2013; Williams et al., 2009). Additionally, the overall results on research on the impact of social media on users' well-being have been mixed. Researchers suggest that this is because most studies have failed to differentiate between specific social media platforms. For example, in the wake of a sudden loss of social contact during the COVID-19 lockdown, active use of Facebook during the pandemic was tied to greater negative affect, while active use of Twitter and Instagram were tied to greater life satisfaction through increased social support (Masciantonio et al., 2021).

To address the identified knowledge gaps in social media use literature, the following three objectives guided this study:

- (a) to examine the interrelationship between time spent on social media, time spent on schoolwork, and college students' academic performance;
- (b) to confirm the rise of TikTok use among college students and investigate gender differences in its use; and
- (c) to understand college students' perceptions of how their engagement with a preferred social media platform influences their academic performance and detect possible discrepancies between their perception and reality (as measured by college GPA).

The Effect of Social Media Use on College Students

Results of a recent study of the use of social media among college students demonstrated that out of 300 participants, 97% were social media users, 57% of them were addicted, and only 1% used it for educational purposes (Kolhar et al., 2021). This provides a glimpse of the sheer amount of social media consumption among college students and its impact. Other studies have investigated multiple aspects of social media use and its effects on college students. High levels of social media use were correlated with depression in a nationally representative sample of 1,749 U.S. emerging adults (Shensa et al., 2017). The time spent on Facebook was negatively correlated with college GPA in a sample of 1,839 U.S. college students (Junco, 2012). While researchers have been investigating the relationship between social media use and college students' academic performance, little research has examined the relationship between social media use and academic outcomes, along with the time spent studying. Independent variables may work together to affect an outcome. For example, time spent on social media may, but does not have to, reduce the time spent on schoolwork. This matters because the more time students spend studying, the better grades they may receive.

Adoption of Multiple Social Media Platforms

The evolution of social media has been fueled by the human impulse to communicate, and by advances in digital technology. Nowadays, many people have more than one social media account. For the average user, each platform likely serves a different purpose. For example, LinkedIn is a career management tool that offers a variety of ways to expand individuals' professional networks by finding and connecting with relevant professionals in their industry. Twitter can be more conversational than other platforms, and Instagram is built

around photos, videos, and captions. First featuring lip-synching and dancing to popular songs, TikTok's current content has expanded to short-form videos on every topic imaginable. Although people use multiple social media platforms, they tend to use them in different ways, and with different frequency. Individuals usually have a major/favorite social media platform, which they use most.

The Rise of TikTok Use among College Students

TikTok has become one of the most-downloaded apps in the world. It allows its users to both create and watch short videos, which are normally 15 seconds in length. As young people long for micro-entertainment, this is one of the primary reasons for the app's popularity. It surpassed two billion downloads in the App Store and Google Play in 2020, achieving the highest growth of a platform in the history of app stores (Vázquez-Herrero et al., 2022). It stands out from other social media platforms with its high user engagement, surpassing Facebook as the app with the highest monthly use (Scherr & Wang, 2021). Since its launch in China in 2016, TikTok has become a global success, especially among the younger users. Young adults aged 30 and below are the majority of users of TikTok in China, and they spend an average of 52 minutes daily on TikTok (e.g., Xiuwen & Razali, 2021). Therefore, it is important to corroborate the rise of TikTok use among U.S. college students.

The Role of Gender in Social Media Use

While research suggests no gender differences in the time spent online, gender differences exist in motivation to use the Internet, and its use patterns (Muscanell & Guadagno, 2012). Women tend to use the Internet to establish and maintain relationships, while men tend to spend their time online on task-focused activities such as reading the news and obtaining financial information (e.g., Williams et al., 2009). Social connectedness varies by gender more than any other demographic characteristic (e.g., Caetano et al., 2013). According to evolutionary psychologists, social cooperation is an adaptive trait for women (e.g., Ivey, 2000). In ancient times, females' survival—and that of their children—depended on a good relationship with others in the tribe, and especially other women. While birth control and modern social structures have made these relationships less important for survival, the instinct is still there. Therefore, it is important to examine gender differences in social media use.

The Effect of Major Social Media Platform on Students' GPA: Perception vs. Reality

The aggregated numbers of social media users cover up a great amount of heterogeneity across platforms. Some social media platforms are more popular than others among specific age groups or gender. For example, TikTok did not exist until 2018, but it is equally, if not more popular with teen than Instagram and Snapchat. In case of some platforms, the gender differences are substantial. In 2019, there were three times as many females as males using Pinterest. In contrast, twice as many males as females used Reddit (Ortiz-Ospina, 2019). People may consume the same content from different platforms (usually their major/preferred social media platforms). The variation is due partly to the nature of the platforms and the characteristics of the people they attract. Previous researchers either treat "social media usage" as an umbrella term that covers all uses of the new social technologies or focus on the effect of a particular social media platform on student outcomes (e.g., Bhandarkar et al., 2021; Xiuwen & Razali, 2021). Further, no research has examined the possible discrepancy between

students' perceptions of how their major social media platform use influences their academic performance, and reality. As perceptions are based on individual's sensory information, they are subjective, and may be incorrect (e.g., Cheek et al., 2021).

THE CURRENT STUDY

To investigate the identified knowledge gap, the following three research questions guided this study:

1. What are the relationships between social media usage, time spent on schoolwork, and academic performance in college students?
2. Is TikTok the most popular social media platform among U.S. college students?
 - a. Is TikTok more popular among U.S. female than male college students?
3. Do students' *perceptions* of how social media platforms influence their academic performance differ by their major social media platform?
 - a. Is there a gap between students' perception and reality (as measured by college GPA)?

METHOD

Participants

A total of 306 college students (190 females and 116 males,) were recruited from a southern US mid-size research university. The students ranged across classifications (from freshmen to seniors), majors (e.g., engineering, business, and psychology) and ethnicities (Caucasians, African American, and Asian). However, the majority of the participants were Caucasian (88%), which reflects the make-up of the university's student body.

Materials

The survey (see [Appendix A](#) for the survey content) was designed to:

- (a) examine the interrelationship between time spent on social media, time spent on schoolwork, and college students' academic performance,
- (b) confirm the rise of TikTok use among college students ("What site do you spend the majority time on?"), and
- (c) understand college students' perceptions of how their major social media platform influences their academic performance ("If I did not have social media, I believe I would have higher GPA.").

Procedure

The IRB-approved, anonymous survey was distributed via e-mail to students through campus organization group messages. Originally, 335 students volunteered to participate, but only 306 of them have answered all the questions. The principle of voluntary participation was strictly abided by so that students were not forced to participate in the research. They could discontinue their participation at any time without penalty or loss of benefits.

Data Analysis

The Pearson correlation coefficient is the most common way of measuring a linear correlation. Therefore, first, Pearson's correlations were computed to determine whether significant linear correlations exist between time spent on social media, time spent on schoolwork, and college students' academic performance (GPA). Students were divided into different groups based on their major social media platform (e.g., TikTok-favoring, Snapchat-favoring, Instagram-favoring, or others). Second, a frequency test was performed to confirm the rise of TikTok among college students, followed by a Chi-square test of independence to look into the gender distribution of different social media active users. Third, two separate one-way ANOVA tests were performed to:

- (a) understand students' perceptions of how their major social media platform influences their academic performance and
- (b) explore the possible discrepancies between their perceptions and reality (college GPA).

Both one-way ANOVA tests share the same independent variable (grouped students based on their major social media platform)

RESULTS

RQ1. What are the relationships between social media usage, time spent on schoolwork, and academic performance in college students? As expected, time spent on social media was negatively correlated with GPA ($r=-.16$, $p<.001$). However, time spent on schoolwork had no effect on GPA ($r=.03$, $p=.580$) and time spent on social media was positively correlated with time spent on schoolwork ($r=.14$, $p=.020$).

RQ2. Is TikTok the most popular social media platform among U.S. college students? As hypothesized, *TikTok* was the most popular social media app among the participants in this current study, with 39.5% of the 306 participants spending most of the time on it, followed by Snapchat (28.8%), Instagram (15.7%), and others such as Twitter, YouTube, and Facebook. Further, there was a significant relationship between gender and college students' preferred social media platform, $X^2(3, n=306)=14.53$, $p=.002$. TikTok was 40.5% of the female participants' major social media platforms, followed by Snapchat (31%), Instagram (15.26%), and others such as Twitter, YouTube, and Facebook (13.16% when grouped together). However, only 28.45% of the male participants spent the majority of their time on TikTok, followed by Snapchat (25%), Instagram (15.97%), and others such as Twitter, YouTube, and Facebook (29.41% when grouped together).

RQ3. Do students' *perceptions* of how social media platforms influence their academic performance differ by their major social media platform? Based on the two separate one-way ANOVA tests, students' *perceptions* of how social media platforms influence their academic performance differ significantly by their major social media platform, $F(3, 302)=3.25$, $p=.020$. Post hoc comparisons using Tukey's HSD indicated that the only significant difference took place between the group of TikTok-favoring users (mean $[M]=3.37$, standard deviation $[SD]=1.28$) and the group of other social media active users such as Twitter, YouTube, and Facebook ($M=2.75$, $SD=1.37$). However, there was a gap between students' perceptions and reality. While TikTok-favoring students were more likely to perceive that their GPA would be higher if they did not use social media, their GPA was not significantly different from other social media active users, $F(3, 302)=1.29$, $p=.280$.

DISCUSSION

Social media have significant presence in the lives of college students. In line with previous literature (e.g., Lau, 2017), the present study suggests a negative effect of social media usage on college students' academic performance. This is because:

- (a) social media usage develops into an addiction, which increases academic procrastination and reduces sleep duration and quality, thereby leading to academic stress;
- (b) individuals with more digital lifestyles (e.g., social media enthusiasts) tend to struggle to focus on the environments, where prolonged attention is needed, and
- (c) social media use is linked to decline in mental health and academic distraction, which can result in poor academic engagements (e.g., Azizi et al., 2019; Berryman et al., 2018; Consumer Insights, 2015).

Further, we found that students who spent more time on social media tend to spend more time on schoolwork, and time spent on schoolwork was not positively correlated with GPA. This may indicate social media multi-tasking. Multitasking refers to the engagement in more than one task within a given period. Multitasking mainly takes three forms: dual-tasking, rapid attention switching, and continuous partial attention (Wood & Zivcakova, 2015). Regardless of the forms that multitasking behavior may take, studies have suggested that social media use during academic work impedes student learning, as reflected in students' GPA (van der Schuur et al., 2015). The current research agrees with the existence of ample evidence documenting the negative effect of social media multitasking on student learning. As social media has become indispensable to college students, many students have developed the "always-on" and "always-connected" lifestyle. Multitasking with social media has become pervasive both inside and outside the classroom (e.g., Deng et al., 2019).

Our results indicate that, in present sample, TikTok was the most favored social media platform among young adults, particularly among women. While millennials seem to prefer to consume content, Generation Z prefers to create content themselves. The success of TikTok can be attributed to multiple factors, but its thoughtful product design that inspires and empowers self-expression may be the key characteristic, which is winning over Generation Z (Muliadi, 2020). Further, this social media platform is seemingly made for today's younger generation, who are glued to their smartphones and get bored easily. It appears that the short video clips cater to their short attention span (Taulli, 2020).

One big reason TikTok attracts so many young *women* is that it is a platform favored for its 'realness,' humor, and creative expression, compared with 'living my best life' posts on Instagram and 'what I've achieved' updates on Facebook (YouthSense, 2022). For many young women, Instagram use results in distorted body image, and unhealthy social comparison. However, comments about TikTok from Generation Z females suggested pressure relief while using TikTok (YouthSense, 2022). This suggests that traditional social media platforms have become a space to compete, which has made them less welcoming, especially for people who are simply looking to connect and avoid peer pressure.

While TikTok active users were more likely to perceive that if they did not use social media, they would have a higher GPA, their GPA was

not significantly different from other social media users. Since launching in 2016, TikTok has gained more than one billion monthly active users and has become one of the top social media platforms among young adults worldwide. The sources of its success are the endless cycle of short videos and individually targeted content (Health Tech Digital, 2023). Therefore, it seems that the TikTok algorithm is designed to make users addicted easily. This might explain TikTok active users' perceptions of the effect of TikTok on their academic performance, even if their GPA was not different from other social media active users. Alternately, it is possible that engaging with many short videos on TikTok results in perception of consuming more content than on other social media sites, which may lead to perceptions of great effect on academics.

All social media platforms share the same risk factors for addiction, such as easy access and speedy rewards, which make users want to stay engaged with the app for long periods of time (Goldman, 2021). Further, many different factors contribute to college GPA. For example, the best predictors of college students' GPA may be academic self-efficacy and achievement motivation. Finally, the majority of TikTok users tend to be females (as reflected in the current study), and there is evidence that gender influences GPA among college students. A female advantage in school marks is a common finding in education research (e.g., Voyer & Voyer, 2014). Therefore, the gap between TikTok active users' perceptions of how social media apps influence their academic performance and their GPA was uncovered.

IMPLICATIONS & LIMITATIONS

Implications for Future Research

Although our study was not intended to examine social media multi-tasking among college students, social media multitasking emerged as a potential theme early in our data analysis since

- (a) students who spent more time on social media tend to spend more time on schoolwork and
- (b) time spent on schoolwork had no significant positive relationship with GPA.

Social media multitasking is prevalent, particularly among youth (Voorveld & van der Goot, 2013). College students commonly multitask with their social media usage while studying. A study conducted with college students in Hong Kong showed that although they used social media for discussing and searching for course-related information, they were easily distracted by the entertainment and social functions provided by social media (Tang et al., 2015). Social media multi-tasking should be measured in future studies to better understand the positive correlation between the time spent on social media and the time spent on schoolwork. Social media multi-tasking may function as a mediator that explains the positive correlation between time spent on social media and time spent on schoolwork.

Compared with other social media active users, people who adopted TikTok as their major social media platform perceived that if they did not use social media, they would have a higher GPA. In fact, the GPA of participants did not differ significantly, regardless of what was their primary social media platform. Whether TikTok is more addictive than other social media platforms remains to be seen given that

- (a) Instagram and Facebook's algorithms also select content suitable for users, which coincides with their viewing habits and
- (b) short-form video content has become a staple of many other social media platforms, including Instagram and YouTube.

For future research, after individuals are categorized according to their major social media platform, validated social media addiction scale should be used to measure their level of addiction to examine whether TikTok stands out in terms of addictiveness. Further, GPA is not the only criterion when assessing students' learning outcomes. Motivation comes with many benefits including increases in effort, energy, persistence, and creativity. The effects of social media use on students' academic motivation needs to be considered as well.

Implications for Practitioners

Teachers, professors, and school counselors can explain to their students the negative effects of excessive social media by citing the results from the current study (time spent on social media is negatively correlated with GPA). When one scrolls through a social media feed, their brain releases dopamine in anticipation of interesting content, or notifications from other users. This reinforces the behavior and makes it difficult to resist the urge to keep scrolling. While instant rewards (e.g., social media use) may bring immediate pleasure, research suggests that true happiness lies in delayed gratification (e.g., Gschwandtner et al, 2022). The ability to delay gratification (e.g., choosing to work on a school project instead of watching short videos on a smart phone) is associated with better self-control (e.g., emotional regulation), improved decision-making, and long-term success (e.g., better academic achievement). By resisting the urge for instant gratification and devoting one's time and energy to meaningful activities that are in line with their values and goals, people can experience a deeper sense of fulfillment and long-lasting happiness (Bembenutty, 1999). Educators should explain the differences between instant rewards and delayed gratification to their students and help them set long-term goals. Goal setting can support a growth mindset by helping teens and emerging adults experience their own abilities and leadership, so they know how to fight the temptations of immediate gratification.

Limitations

First, the lack of ethnic diversity among the current research participants is a major limitation. While racial differences in social media adoption are not very evident as social media consumption has grown, social media preferences for specific sites vary by race and ethnicity. For example, Instagram was more popular among Hispanic and African American internet users than among Caucasian internet users. Twitter, on the other hand, had a more equal distribution; about 25% of Hispanics and blacks used the site, along with 21% of whites. (Perrin, 2015). Therefore, the generalizability of the results is limited given that all the participants hail from a southern U.S. research university and a great majority of them are traditional white college students (18 to 24-year-old). Second, evaluating the reliability and validity of the scales adopted in a research study is essential if findings are to be used in practice. Students' perceptions of how their major social media platform affect their GPA was measured by one item, justifying the necessity for further investigation into the gap between perception and reality.

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APPENDIX A: SOCIAL MEDIA & ACADEMIC PERFORMANCE AMONG COLLEGE STUDENTS**1. Gender:**

Female Male Gender fluid Prefer not to say

2. What is your undergraduate classification?

Freshman Sophomore Junior Senior

3. What is your major?**4. Ethnicity**

African American Asian Caucasian Hispanic

5. What is your current GPA?**6. What site do you spend the majority of time on? (circle one)**

a. Instagram

b. Twitter

c. Snapchat

d. Facebook

e. Pinterest

f. TikTok

g. YouTube

h. Other:

7. Approximately how many hours a day do you spend on social media?**8. Approximately how many hours a day do you spend doing homework/studying for school?****9. If I did not have social media, I believe that I would have a higher GPA.**

Strongly disagree 1 2 3 4 5 Strongly agree