

Measuring the Relationship between the Big Five Personality Traits and Time Spent on Social Media

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Abstract

This study examined the effects of personality on social media usage. Ninety-seven participants completed a Social Media Survey that asked them to use the iPhone “Screen Time” settings to record the time spent on social media applications in a given week. They then completed the 44-item Big Five Inventory to measure their personality based on openness, conscientiousness, extraversion, agreeableness, and neuroticism. It was hypothesized that people with higher levels of all big five traits will have higher social media usage. Similarly, it was hypothesized that people who score higher on openness, agreeableness, and extraversion will use Snapchat the most. It was also hypothesized that those who score higher on conscientiousness and neuroticism will use Instagram the most. Finally, it was hypothesized that TikTok will be the most used application overall. There were no significant correlations between social media usage and any of the five personality traits. Also, the only significant finding between any of the social media applications and personality traits was between YikYak and neuroticism. As hypothesized, TikTok was the most used social media application.

Keywords:

personality, social media usage, Big Five, online habits

Introduction

Social media is the quickest and easiest way to keep multiple people up-to-date on someone’s personal life and are the most often visited sites in an online environment (Gil de Zunga et al., 2017). Instead of having to speak to individuals, a person can simply

upload a picture or send out a tweet to their followers and instantly update hundreds, or even thousands of people at the same time. This study will examine personality and its impact on social media usage within college students. This research is important because personality is relatively consistent throughout middle childhood to middle age (Hampson & Goldberg, 2006), whereas social media use is controlled but may be seen by some as necessary for modern-day communication (Ozimek & Forster, 2021). These platforms have become ways to share more than personal anecdotes, as people can share news articles, receive updates from news sources directly, as well as gain education in areas they may not know too much about. There is minimal research on the way personality influences the time spent on applications since social media is such a recent phenomenon. Previous research has concentrated on how social media usage impacts body image, life satisfaction, and posting habits (Fardouly et al., 2018; McLean et al., 2015; Veldhuis et al., 2020). However, the present study aims to focus on personality and its correlation to college students' social media habits.

Theory

The Big Five personality traits originated in 1949 by D.W. Fiske and has since been extended by many other researchers (What Are The Big 5 Personality Traits?, 2021). It is currently the most reliable way to measure personality amongst psychologists. Through the use of traits categorized into the big five, openness, conscientiousness, extraversion, agreeableness, and neuroticism, researchers are able to quantitatively study personality. It is used primarily to measure personality as a predictor for a multitude of variables, such as academic success, professionalism, and even work ethic (Big 5 Personality Traits, n.d.). For example, a study examined the relationship between personality and college students' academic motivation. They found that the key trait to academic motivation was conscientiousness as well as openness (Komarraju et al., 2009). The Big Five personality inventory is highly reliable and acceptable throughout psychological research.

Openness

There are five main components of the personality: openness, conscientiousness, extraversion, agreeableness, and neuroticism

(McCrae & John, 1992; John & Srivastava, 1999). Openness, specifically, is a person's willingness to experience new things and "think outside the box" (Lim, 2020; McCrae & Costa, 1999). People with higher levels of openness tend to be more creative and receptive to change. Likewise, these types of people would be more adventurous and eager to try something new. In a study of 503 college students, it was found that people with higher levels of openness use social media more than those with lower levels of openness (Özgüven & Mucan, 2013). However, a more recent study found that people who use social media more frequently tend to rate solitary activities with higher levels of desirability than social activities (Hill & Zheng, 2018). In other words, those who use social media desire isolation more often than social interaction. In this case, there would be a lack of openness to new experiences if those who use social media prefer to be alone. Similarly, over time, people in general have spent less time on non-digital social interactions. Previous to the coronavirus, data showed that over a 14-year period, Americans spent significantly less time on in-person interactions (Twenge & Spitzberg, 2020).

Conscientiousness

Another part of the personality, conscientiousness, is defined as a person's level of self-control and self-regulation in order to achieve their goals (Lim, 2020; McCrae & Costa, 1999). A person with high levels of conscientiousness would be well-organized and deliberate with their actions. Previous research has depicted that those with higher levels of this personality trait are more likely to engage in social media (Özgüven & Mucan, 2013; Peterka-Bonetta et al., 2021). In other words, levels of conscientiousness can be a predictor of social media use. Similarly, one particular study showed that people with higher reports of conscientiousness were more willing to enhance their friendships and social networks (Lee et al., 2010). This research showed that people who were more meticulous were more likely to want to build stronger bonds, especially in the workplace. Additionally, research has shown that people with higher levels of conscientiousness are less likely to regret a self-related Facebook post (Kircaburun et al., 2020). This can be related to how particularly conscientious people are in general, which clearly translates into their social media presence.

Extraversion

Extraversion is described as the extent to which someone pursues social interaction (Lim, 2020; McCrae & Costa, 1999). Simply, someone with high levels of extraversion is more outgoing and likes being the center of attention. Research has consistently shown that higher extraversion scores lead to higher social media use (Bowden-Green et al., 2020; Correa et al., 2010). More specifically, one study examined the connection between extraversion and internet addiction (Hawi & Samaha, 2019). They found that people with lower levels of extraversion tend to be more susceptible to internet addiction and excessive internet usage. Another study examined extraversion and its relation to the need for approval (Steers et al., 2016). They found that participants with higher levels of extraversion and higher need for approval also rated higher levels of anxiety. Additionally, researchers found that high functioning introverts preferred to spend their solitude without their devices (Thomas et al., 2020). However, they also discovered that high functioning introverts spent significantly less time on social media than low functioning introverts. They determined that psychological development may be a better predictor for social media usage.

Agreeableness

Agreeableness can be defined as how people present themselves within their relationships (Lim, 2020; McCrae & Costa, 1999). A person with high levels of agreeableness would be trustworthy and sympathetic, as opposed to insulting and stubborn. In general, they are easy to like, and they naturally have these traits. It is common for adolescents to feel the need to be liked, as determined by their social media presences (Meeus et al., 2019). In this study, it was shown that adolescents' dependence on social approval can be linked to the positive feedback by peers, typically in forms of "likes" on social media posts. Likewise, this is correlated to decreased self-esteem within this age group (Meeus et al., 2019). In relation to agreeableness, the importance of peer approval is clear. They want to appear more likeable to their peers in order to gain popularity and confirmation from people their age. Additionally, previous research has shown that fear of judgement has led people to develop eating disorders (Zeeni et al., 2018). Essentially, social media usage induced higher levels of anxiety based on how other people perceived them.

They found that people who use social media more often were more likely to have an eating disorder or a form of disordered eating (Zeeni et al., 2018). This further supports how people focus on how others perceive them just because they value being liked and accepted by others more than being themselves. Additionally, one study found that Twitter users who have higher levels of life dissatisfaction often use more negative and vulgar language in their posts (Yang & Srinivasan, 2016). In this case, people expressing lower levels of agreeableness in real life were translating those complications to their social media feed.

Neuroticism

Neuroticism illustrates emotional stability and likeliness to find events threatening (Lim, 2020; McCrae & Costa, 1999). In simpler terms, people with high levels of neuroticism are highly irritable and anxious, whereas someone with low levels of neuroticism are calmer and more confident in themselves. Previous studies have shown that neuroticism plays a key role in mental health and body image (Allen & Celestino, 2018). Likewise, research has shown that people use social media to articulate a curated lifestyle (Veldhuis et al., 2020). In other words, people are very specific about which details of their lives they share because of how they want to be perceived by people they know and the general public. Other studies examine how feedback from social media posts has a strong influence on body surveillance (Butkowski et al., 2019). Additionally, this study showed that women who are more invested in selfie feedback reported higher levels of body dissatisfaction and drive for thinness. In the same way, female young adults reported more disordered eating habits when they were more invested in feedback (Butkowski et al., 2019). In a different study, researchers found that girls who shared selfies more often were more likely to manipulate their images (McLean et al., 2015).

Social Media

Personality can have a large impact on someone's social media habits. Research has shown that the less time preadolescents spend on social media, the better their mental health is, due to the limited number of social comparisons they are exposed to (Fardouly et al., 2018). Moreover, this research showed how crucial the amount of time people spend on social media is. While social media is a great

place to share information, problems arise when people compare what they have or what they look like to others. Other research has shown that those with social media addiction are significantly more likely to have symptoms of major depressive disorder than those without (Robinson et al., 2019). Similar to the previous study, research on social media continues to support the notion that there is an array of negative impacts that are rooted in excess usage. A similar study found that social media is correlated to depressive symptoms, but significantly more apparent in Twitter users than Facebook and Instagram users (Jeri-Yabar et al., 2018). Depressive symptoms can be seen in people that use any social media platform, however, people that use Twitter are significantly more likely to have apparent symptoms.

The Present Study

The primary focus of past research has been how social media influences individuals' self-perceptions. Social media can influence the desire for solitude (Hill & Zheng, 2018). Additionally, past research examines the negative influences on one's self-esteem or self-perceptions (McLean et al., 2015; Midgley et al., 2020). In a similar way, past studies have focused on how social comparisons through social media have impacted levels of body satisfaction and increased fears of judgement (Zeeni et al., 2018). However, research has failed to investigate the impact of one's personality on social media usage.

The present study provides more descriptive research and seeks to replicate past investigations of the correlation between the Big Five personality traits and social media usage, as there is limited research on these specific variables and their relationship with one another. Specifically, the current study compares the time spent on 13 social media platforms, such as Instagram, Snapchat, and iMessage (Filipowicz, 2021; Stevens, 2019), with the participants personality scores. Based on previous findings (e.g., Özgüven & Mucan, 2013; Peterka-Bonetta et al., 2021), it is hypothesized that people with higher levels of all big five traits will have higher levels of social media usage. It is also hypothesized that people with higher levels of openness, agreeableness, and extraversion will use Snapchat, a temporary photo and video sharing application that applies filters to faces, the most, since those who regularly post on Snapchat are typically sharing what they are doing, what they are wearing, or who

they are with, which are all qualities of people with higher levels of these traits. Similarly, those with higher levels of conscientiousness and neuroticism will use Instagram, a long-term photo and video sharing application, the most. This is hypothesized because Instagram posts are going to be available until the person deletes them, as opposed to Snapchat, where the posts disappear after 24 hours. On Instagram, users can create “aesthetically pleasing” feeds, or shape the way they want to be viewed by others more easily. Lastly, it is hypothesized that TikTok, a video sharing application, will be the most used social media application and will therefore be related to high levels of all big five personality traits. This is because TikTok is heavily based on trends, and is a simple application to navigate, therefore making it easier to scroll through short videos without thinking of the time.

Methods

Participants

There were 100 participants in this study, however, three participants failed to complete the study and were excluded from the results. This study consisted of 86.6% female and 12.4% male undergraduate students from Monmouth University enrolled in psychology courses. The average age was 19.6, ranging from 18 to 27, with 36.1% participants being first year students, 27.8% sophomores, 22.7% being juniors, and 13.4% seniors. There were 27.8% with a major in psychology and 14.4% in social work. They were 63.9% Caucasian, 21.6% Hispanic American, 4.1% Asian, 3.1% multi-ethnic, 2.1% African American, and 5.2% other. Participants were a convenience sample obtained from an online research pool (SONA) utilized by the Department of Psychology and received 0.5 research credit toward psychology course requirements.

Materials

This study utilized a measure of personality, social media usage, and a demographics questionnaire.

Personality

Personality was measured using the Big Five Inventory (Goldberg, 1992; John & Srivastava, 1999). Participants would respond to statements such as “I see myself as someone who is talkative

(extraversion), has a forgiving nature (agreeableness), is a reliable worker (conscientiousness), gets nervous easily (neuroticism), or comes up with new ideas (openness).” Each statement correlates to one of the five personality traits. Participants had to rate their level of agreement on a 5-point scale (1 = disagree strongly, 5 = agree strongly) to these statements about themselves. Cronbach’s alphas for questions relating to extraversion, agreeableness, conscientiousness, neuroticism, and openness were .86, .74, .76, .78, .78, respectively. Cronbach’s alpha for the entire scale was .79.

Social Media Usage

This survey measured social media usage by the iPhones “Screen Time” tab in the Settings application to find the accurate number of hours and minutes the user spent on social media the past full week.

Demographics

The demographics questionnaire asked participants to indicate their ethnicity, gender identity, age, year in school, and their major.

Design

This study was a correlational design. The independent variable was personality, and the dependent variable was the participant’s time spent on social media applications per week. All participants received the same questionnaires.

Procedure

Participants used an online research pool to sign up for this study. They had fifteen minutes to complete the survey by the designated deadline. They digitally agreed to an informed consent and were prompted to continue to the personality questionnaire. This was followed by the social media survey that asked participants to record their time spent on social media applications in the last week. Individuals had to open their settings application, go to the “Screen Time” tab, then the “Show All Activity” tab, and swipe to show the data for the previous week. They then pressed “Show Categories,” followed by the “Social” tab to view the social media applications and the time spent on each for the week. Once completed, they continued to the demographic questionnaire. Finally, they read a debriefing and digitally acknowledged their participation in the study.

Results

Personality and Total Social Media Usage

The relationship between time spent on social media and five personality traits was examined. It was hypothesized that those with higher levels of openness, conscientiousness, extraversion, agreeableness, and neuroticism will spend more time on social media. A Pearson r correlation was used to test the significance between the independent variables, the individual personality traits, and the dependent variable, social media usage. Personality was measured by a 44-item scale and social media usage was measured by a self-report survey. The hypotheses were not supported by the results. The correlation between openness and social media usage was $r(97) = .07$, $p = .12$. The correlation between conscientiousness and social media usage was $r(97) = -.08$, $p = .42$. The correlation between extraversion and social media usage was $r(97) = -.05$, $p = .66$. The correlation between agreeableness and social media usage was $r(97) = -.06$, $p = .53$. The relationship between neuroticism and social media usage was $r(97) = .16$, $p = .12$ (Table 1). There was no statistically significant correlation between social media usage and any of the personality traits.

Table 1

Correlations Between the Big 5 Personality Traits and Social Media Usage

	Social Media
Extraversion	-.05
Agreeableness	-.06
Conscientiousness	-.08
Neuroticism	.16
Openness	.07

Note. $N = 97$. The Pearson r correlations between the Big 5 Personality traits and total time spent on social media applications were not significant, $p > .05$.

Extraversion, Agreeableness, Openness and Snapchat

The relationship between the social media application Snapchat and the five personality traits was examined. It was hypothesized that those with higher levels of extraversion, agreeableness, and openness will use Snapchat more frequently. A Pearson r correlation was used to test the significance between each individual personality trait and Snapchat usage. A 44-item questionnaire was used to measure the

independent variable, personality, and a self-report survey was used to measure the dependent variable, Snapchat usage. The results did not support the hypothesis. The relationship between Snapchat usage and extraversion was $r(97) = .02, p = .85$. The relationship between Snapchat usage and agreeableness was $r(97) = -.12, p = .24$. The relationship between openness and Snapchat usage was $r(97) = -.10, p = .34$ (see Table 2). Additionally, conscientiousness and neuroticism did not yield significant findings in relation to Snapchat usage. There were no statistically significant relationships between Snapchat and any personality traits.

Table 2
Correlations Between the Big 5 Personality Traits and Social Media Applications

	Extraversion	Agreeableness	Conscientiousness	Neuroticism	Openness
Discord	-.16	-.20	-.09	.11	.01
Facebook	-.16	.02	-.08	.12	-.03
GroupMe	-.05	.06	-.06	-.03	-.05
Instagram	-.01	.20	.08	<-.01	.05
iMessage	.03	.01	.12	.19	<.01
Messenger	.03	-.01	<-.01	-.14	<-.01
Snapchat	.02	-.12	.08	.09	-.10
TikTok	<.01	-.04	-.17	.10	.12
Tumblr	-.04	-.11	-.14	-.05	.07
Twitter	-.07	-.15	-.17	.14	.02
Twitch	<-.01	-.04	-.06	<-.01	.02
WhatsApp	-.08	.09	-.05	.10	.14
Yik Yak	.02	-.17	-.08	.29**	.17

Note. $N = 97$. The Pearson r correlations between extraversion and each of the thirteen social media applications were not significant, $p > .05$. The Pearson r correlations between agreeableness and each of the social media applications were not significant, $p > .05$. The Pearson r correlations between conscientiousness and the social media applications were not significant, $p > .05$. The correlation between neuroticism and the application YikYak was significant as noted by a “**,” $p = .004$. All other applications had no significant correlation to neuroticism, $p > .05$. The Pearson r correlations between openness and the social media applications were not significant, $p < .05$.

Neuroticism, Conscientiousness, and Instagram

The relationship between the social media application Instagram and the five personality traits was also analyzed. It was hypothesized that those with higher levels of neuroticism and conscientiousness will spend more time on Instagram. A Pearson r correlation was used to determine the significance between the independent variable, each personality trait, and the dependent variable, social media usage. The hypothesis was not supported by the results. The relationship

between neuroticism and Instagram was $r(97) < .01, p = .99$. The relationship between conscientiousness and Instagram was $r(97) = .08, p = .41$ (see Table 2). In the same way, openness, agreeableness, and extraversion had no significant correlations to Instagram usage. There were no statistically significant correlations between Instagram and any of the five personality traits.

Exploratory Analysis

After testing all hypotheses, the relationships between all five personality traits and 13 other social media applications were examined for any possible relationships. A Pearson r correlation was used to correlate relationships between all social media applications and each of the personality traits. The relationship between the social media application YikYak, an anonymous posting site, and neuroticism was $r(97) = .29, p < .01$. There was a strong significant correlation between YikYak and neuroticism. There were no other significant correlations between the applications and the personality traits (see Table 2). There was statistical significance between neuroticism and YikYak, indicating that those with increased neuroticism spent more time on the app.

Table 3
Total Number of Minutes per Application per Week

	M	SD	SUM
Discord	14.09	94.08	1,367.00
Facebook	22.34	47.82	2,166.53
GroupMe	7.88	19.21	764.35
Instagram	192.31	179.59	18,654.00
iMessages	209.32	183.71	20,304.00
Messenger	.76	3.48	74.02
Snapchat	216.76	254.81	21,026.00
TikTok	328.00	320.01	31,815.00
Tumblr	8.97	.80.07	870.00
Twitter	35.18	111.50	3,412.13
Twitch	35.72	324.57	3,465.00
WhatsApp	23.38	136.28	2,267.00
Yik Yak	3.01	12.43	292.00

Note. $N = 97$. The sum is the total number of minutes all participants spent on the application in a week

Social Media Time

Across all 97 participants, the total time spent on social media applications in a given week was analyzed. It was hypothesized that

TikTok would be the most used social media application. To examine the total number of minutes spent on each social media application, a descriptive statistic of sums was used. With a total of 31,815 minutes, TikTok was the most used social media application. As shown in Table 3, TikTok, Snapchat, and iMessage were the most used social media applications. TikTok was the most used application by over 10,000 minutes.

Discussion

The present study analyzed the relationship between personality and social media usage. Personality was operationalized using the Big Five Personality Traits, which are openness, conscientiousness, extraversion, agreeableness, and neuroticism. It was hypothesized that those with higher levels of openness and conscientiousness will spend less time on social media. It was also hypothesized that those with higher levels of extraversion, agreeableness, and neuroticism will spend more time on social media. The results did not support these hypotheses, as there were no statistically significant relationships between social media usage and any of the five personality traits.

The present study also examined the relationship between each personality and Snapchat, as well as Instagram usage. It was hypothesized that those with higher levels of extraversion, agreeableness, and openness will use Snapchat more frequently. Similarly, it was hypothesized that those with higher levels of neuroticism and conscientiousness will spend more time on Instagram. There was no statistical significance, and the hypotheses were not supported. However, the relationship between neuroticism and YikYak was statistically significant.

Lastly, this study calculated the total number of minutes spent on each social media application by all of the participants in a given week. It was hypothesized that TikTok would be the most used social media application. The results did support the hypothesis. TikTok, Snapchat, and iMessage were the three most used applications, respectfully.

Implications and Interpretation of Results

Personality

There has been limited research on the effect of personality on social media usage. However, research has made interesting discoveries

about how personality influences daily habits. The hypotheses in the present study were based on past research that showed relationships between personality traits and social media use/habits. Specifically, research showed that people with higher levels of openness use social media more frequently than those with lower levels, and that people with higher levels of conscientiousness were more likely to engage with social media (Ozguven & Mucan, 2013). Similarly, research showed that people with lower levels of extraversion were more likely to be addicted to the internet and phone usage (Hawi & Samaha, 2019). Another study showed that “likes” on social media posts are equivalent to popularity amongst teenagers, and that people use social media to only post the highlights of their lives (Meeus et al., 2019; Veldhuis et al., 2020). Unfortunately, the present study did not show any significant correlations between personality traits and social media habits.

These findings, however, may be connected to research that showed that people who spend more time on social media also desire isolation (Hill & Zheng, 2018). In this case, people may be spending more time on social media in their personal spaces due to personal preference. Considering the sample, college students may spend a lot of time in dorm-rooms or off-campus houses, therefore having more free time to frequently check social media. In the same way, they may prefer consuming social media content in their own spaces, rather than in social or public gatherings.

Social Media Applications

In the same way, there was limited research on people’s habits in relation to certain social media applications. One study showed that Twitter users were more likely to be depressed, or have depressive symptoms, than users of Facebook and Instagram (Jerri-Yabar et al., 2018). Likewise, Twitter users with lower life satisfaction will often post more negatively than those with higher life satisfaction (Yang & Srinivasan, 2016). Most research has examined Twitters users, which may be attributed to the fact that posts are usually written statements and are easier to operationalize. However, the present study did not find significant correlations between most social media applications and personality.

Although, the current research did find a strong, significant correlation between YikYak and neuroticism. While this was not

hypothesized, it may be accredited to previous studies that showed how people with higher levels of neuroticism have more mental health and body image issues (Allen & Celestino, 2018). The relationship analyzed in the present study may be related to how people who are more neurotic are more worrisome in general. The application YikYak is for anonymous posting, where anyone can hide behind an emoji and say things that are either upvoted or downvoted by their “Herd,” or people within a five-mile radius. With this, people who are more neurotic may be more concerned about what people are saying about them because it is anonymous, or if their posts are gaining popularity based on what is “trending” on the application. The anonymity of the site may contribute to the anxiety felt by those who use the app.

Strengths and Limitations

There were many factors that contributed to the weakening of the study. To start, the study was administered online, to which participants could take the study on their own time. Without an in-person organization of the study, there may have been discrepancies within the data. For example, the researcher was not present to clarify the study’s instructions and questions, potentially leading to confusion among participants. Moreover, the study was limited to undergraduate students enrolled in psychology courses. This is a specific population that is not entirely generalizable. Additionally, participant selection was limited to iPhone users in order to collect the exact data from the Screen Time analytics. Finally, this study occurred during the end of the Covid-19 pandemic, which may have permanently, or inadvertently, changed people’s social media habits.

Nevertheless, it is important to acknowledge the strengths of this study. The use of the iPhone Screen Time settings provided accurate, real data that was not estimated by the participants. Additionally, all participants received the same instructions, to verify that the procedure was as identical as possible while being taken at a remote location. Similarly, the use of the Big-Five Inventory, a well-known questionnaire in psychology, ensured that the results would be reliably measured. Finally, the original concept of this study provides insight into a field that has minimal research.

Future Directions

To increase external validity and generalizability of this study, researchers should expand their participant pool. Examining age and gender differences between personality and social media usage should be a part of future studies. Researchers could examine the differences between teenagers, young adults, and older populations to examine age differences. Also, the difference in gender and personality in relation to social media usage would be an interesting addition to this research. Furthermore, this study could be conducted in-person to further verify that participants are focused on completing the study accurately, including correctly reporting their screen time data. They may also choose to investigate specific personality traits in correspondence with certain social media applications. With this, it may be more specific to which types of people interact most on individual sites.

Researchers may also choose to examine current social media habits, as well as past and future social media habits, to determine if there are long-term practices resulting from the Covid-19 pandemic. Understanding how people's habits have been impacted by quarantine and in-person restrictions may explain the results of studies completed during this period of time. Further, studies may choose to explore those with other types of phones, not just iPhones, to gain a better understanding of the general population. Future research could observe if people change or adapt their personal habits based on those they follow. In other words, if "personalities" people follow have an impact on their own personality.

Conclusion

The present study set out to determine whether personality influences social media behaviors. No significant relationships were found between the big five traits and time spent on social media. TikTok was the most used application in this sample. Additionally, a significant correlation between neuroticism and YikYak was discovered. By analyzing personality, this study helped to focus on a new aspect of social media usage. It is important to continue the study of social media usage and predictors, as its proliferation can potentially lead to social media addiction and other problematic behaviors.

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