

INSTAGRAM USE AND COLLEGE STUDENTS' ADJUSTMENT

By

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A thesis submitted in partial fulfillment of the requirements for the degree of

MASTER OF ARTS

in

Psychology

Middle Tennessee State University

August 2018

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ACKNOWLEDGEMENTS

I would like to show my appreciation towards my family members, especially my parents for their continuous support. They always were here (via Skype call) to give me words of encouragement that kept me going. I also am thankful towards my parents for respecting my decisions regarding studying abroad and for placing their fullest trust in me in fulfilling my dream. I know I never say this (ever), but I could not ask for better parents. Thank you!

I also would like to take this time to thank my dearest thesis advisor, Dr. Fromuth. Thank you for your guidance, your patience, and also all the face-to-face consultation. Without you, this paper would have been impossible. Other than being my thesis advisor, you also were a great academic and GA advisor! You have pushed me beyond my limits (as a thesis advisor), reminded me when I forgot to fill out my 'Intent to Graduate Form' (as an academic advisor), and taught me how to become meticulous (triple checking grades) as a GA advisor. Now to think about it, these two years would have been unimaginable without you! Thank you for everything!

Additionally, I would like to thank Dr. Kelly and Dr. Kim for being in my thesis committee, assisting me along the way and making this paper possible. Without you, I would be spending a lot more time proof reading my work and getting stuck at writing my SAS codes. Finally, to everyone who has supported, encouraged, or challenged me in anyway, I thank you for you have been amazing in making my graduate school life remarkable. Now that school life is done, it is time to come home!

ABSTRACT

This study explored the relationship between Instagram use and college students' adjustment. Participants consisted of 177 students recruited from a psychology research pool. The participants completed measures of shyness (Revised Cheek and Buss Shyness Scale), academic habits and achievement, college adjustment (College Adjustment Test), overall sleep quality (Pittsburgh Sleep Quality Index), personality (Big Five Inventory), and Instagram use (modified Social Media Disorder Scale). The linear combination of age, gender, and education level was not related to disordered Instagram use. When these factors were examined individually, however, women were found to score higher on disordered Instagram use as compared to men. The disordered use of Instagram also was positively related to shyness level, negative affect, overall poorer sleep quality, and neuroticism, as well as, negatively related to college GPA. Further, this study found that disordered use of Instagram was not related to positive affect, homesickness, academic habits, and other aspects of personality.

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CHAPTER I

INTRODUCTION

Addictive Internet use is characterized by “being overly concerned about online activities, driven by an uncontrollable motivation to perform the behavior, and devoting so much time and effort to it that it impairs other important life areas” (Andreassen & Pallesen, 2014, p. 4054). In 2006, according to a survey conducted in the United States (U.S.) by Aboujaoude, Koran, Gamel, Large, and Serpe (2006), an estimated 0.3% to 0.7% of the sample met their diagnostic criteria for problematic Internet use. In an international study, Petersen, Weymann, Schelb, Thiel, and Thomasius (2009) found that the prevalence of Internet addiction had reached 1.5% to 8.2% worldwide. More notable, approximately 4% of the college population in the U.S. falls within the addictive Internet use range (Christakis, Moreno, Jelenchick, Myaing, & Zhou, 2011).

It is difficult to compare the rates across studies, however, because of the ambiguity of the term “Internet addiction.” As no uniform set of criteria has been established in the examination of Internet addiction (Beard & Wolf, 2001), researchers have to create their own set of criteria for Internet addiction. This, in turn, not only makes cross examination of studies difficult, it also might contribute to measurement errors. Griffiths (1999), for example, argued that many Internet users were not addicted to the compulsion of Internet usage, but were simply using the Internet as a medium to fuel other compulsive addictions (e.g., gambling, video gaming). Therefore, it became necessary for researchers to subcategorize the concept of Internet addiction and to examine the subcategories independently. These subcategories include cybersexual

addiction, social media addiction, net compulsions, information overload, and computer addiction (Shaw & Black, 2008).

Social media, one of the most commonly researched topics, is defined as a group of Internet-based platforms that allows users to connect with other users' information on the same platform, as well as to create, share, and exchange content (Blank & Reisdorf, 2012; Boyd & Ellison, 2007; Kaplan & Haenlein, 2010). In recent years, with the surge in online social entertainment content, such as socializing, sharing personal content (e.g., pictures), and playing games (Allen, Ryan, Gray, McInerney, & Waters, 2014; Ryan, Chester, Reece, & Xenos, 2014), Kuss and Griffiths (2011) concluded that the use of social media has become highly popular among teenagers and young adults. Social media also includes subtypes, such as blogs (e.g., WordPress, Twitter), discussion forums (e.g., Reddit), digital content sharing platforms (e.g., Pinterest, Flickr, Instagram), and social networking sites (e.g., Facebook, LinkedIn) (Saravanakumar & SuganthaLakshmi, 2012). Among these subtypes, the most frequently used applications in the U.S. are Facebook (79%), Instagram (32%), Pinterest (31%), LinkedIn (29%), and Twitter (24%) (Greenwood & Perrin, 2016).

Kuss, Griffiths, Karila, and Billieux's (2014) review found that as technologies progress, a variety of the new gadgets employed to access social media also have the potential to affect the overall frequency of Internet addiction. According to Brenner and Smith (2013), advanced mobile computing devices (e.g., smartphones and tablets) enable populations to quickly gain access to social media as compared to older computing devices (e.g., desktop or laptop). With the use of smartphones, therefore, more

individuals are now at potential risk of developing an addictive use of technology (e.g., social media disorder [SMD]) (Kuss et al., 2014).

In a national survey, data collected from 1,520 adults over a 1-month period showed that the main interactions between social media and American adults were generally news reading (e.g., 2016 Presidential election updates) and work-related issues (e.g., looking for job, or taking break from work) (Greenwood & Perrin, 2016). Among young adults, however, the increase in social media usage primarily reflected motives for identity development and conformity to societal norms, such as to publish content, to stay connected with others, to maintain existing social ties, and to seek out novel relationships with new people (Haythornthwaite, 2005; Roisman, Masten, Coatsworth, & Tellegen, 2004). Over the last decade, numerous studies have attempted to seek understanding of young adults' addictive use of social media (Kuss & Griffiths, 2011; Ryan et al., 2014).

Demographic Variables

Several demographic factors (e.g., age, gender) demonstrate mixed results regarding their correlations with college students' addiction to social media/Internet. In Sahraian, Hedayati, Mani, and Hedayati's (2016) cross-sectional study with Iranian medical students, it was discovered that male students were more susceptible to Internet addiction (i.e., scoring higher on the Internet Addiction Test [IAT]) as compared to their female counterparts. This result is similar to that of Koc and Gulyagci's (2013) Turkish study. Specifically, in that study, male college students, in general, spent significantly more time on Facebook as compared to female college students. Sahraian et al. (2016) concluded that such an outcome could suggest that male students were generally more

interested in information technology, and, as a result, spent more time on the Internet as compared to female students (Sahraian et al., 2016).

Other research, outside of the Middle East region, however, found opposite results regarding the relationship between gender and social media addiction (Hargittai, 2007; Sheldon, 2008). Hargittai's (2007) study, conducted at a U.S. urban public research university, found that female college students were, in fact, more likely to engage in online social networking sites (SNSs) communication as compared to male college students. Sheldon's (2008) study also revealed similar results. In her study conducted with 172 Louisiana State University's students, she found that women spent more time on Facebook as compared to their male counterparts. It was noted that female students, in particular, spent more time on Facebook for entertainment and to maintain existing relationships as compared to male students (Sheldon, 2008). Additionally, Sheldon (2008) found that motives and individual differences are both significant predictors of Facebook use among students. Considering that women use SNSs more often than men, it can, therefore, be hypothesized that they would be more susceptible to social media addiction as compared to their male counterparts.

Andreassen, Pallesen, and Griffiths' (2017) Norwegian online cross-sectional study also found a statistically significant difference between genders on social media addiction scores. They revealed that, among 23,533 adult participants, women scored higher on addictive social media use, as compared to men. In addition, when regression analysis was employed, Andreassen et al. (2017) found that gender contributed significantly to addictive social media use. Andreassen et al. (2017), therefore, proposed

that women were more prone to social media addiction; men, on the other hand, might be more susceptible to addictive use of online asocial activity, such as video gaming (Andreassen et al., 2017).

Although past research reveals relationships between gender and social media/Internet addiction (Andreassen et al., 2017; Hargittai, 2007; Koc & Gulyagci, 2013; Sahraian et al., 2016; Sheldon, 2008), Raacke and Bonds-Raacke (2008) found that there was, in fact, no gender difference in social media addiction. Using sample participants from a U.S. university, Raacke and Bonds-Raacke (2008) found that even though gender differences between college students and less popular social activities (e.g., dating, learning about events) on MySpace and Facebook were statistically significant, when more popular activities were considered (e.g., to keep in touch with old friends/current friends), gender differences became statistically nonsignificant. The outcome suggests that, when men and women are satisfying more popular needs using social media sites, gender has no statistically significant relationship with social media.

Overall, a mixed relationship was found between gender and social media/Internet addiction. Decade-old research within the U.S. found that female college students spent more time on Facebook and online SNS for entertainment and maintaining relationships, as compared to male college students (Hargittai, 2007; Sheldon, 2008); Raacke and Bonds-Raacke (2008), however, found that gender differences were statistically nonsignificant when college students engaged in more popular social activities (i.e., keeping in touch with old/current friends). Even so, recent studies outside the U.S. (more specifically Middle East) found that male students, in general, spent significantly more

time on social media (Koc & Gulyagci, 2013) and were more susceptible to Internet addiction (Sahraian et al., 2016). This could be a result of cultural differences; men outside of the U.S., in general, may be more interested in technology, and as a result, spend more time on the Internet, as compared to their female counterparts (Sahraian et al., 2016). In addition, Andreassen et al.'s (2017) Norwegian study found statistical difference between genders on social media addictive use, with women scoring higher on a social media addictive scale than men. More specifically, Norwegian women were more susceptible to social media addiction, whereas Norwegian men, on the other hand, were more likely to be addicted to other Internet platforms, such as video gaming (Andreassen et al., 2017).

In addition to gender, age also produced mixed results regarding social media addiction. Andreassen et al. (2017) found that age had a negative correlation with addictive use of technologies. More specifically, they found that the older the participants (e.g., 56 years old and above), the less likely the participants would become addicted to technologies (Andreassen et al., 2017). Sheldon (2008) also revealed similar results. In Sheldon's (2008) age-restricted study of 172 college participants ($M = 19.92$ years old, $SD = 1.23$), she found that, compared to older respondents, younger respondents spent more time on Facebook as a platform for meeting new people and establishing new relationships.

In contrast, Koc and Gulyagci (2013) found that there was no clear relationship between age and social media/Internet addiction. In Koc and Gulyagci's (2013) college study, it was found that Facebook-use characteristics (e.g., Facebook addiction, weekly

time commitment) were not dependent on participants' age. Specifically, when college students' ages were examined against Facebook-use characteristics, no significant correlations were found.

Interestingly, the Huang and Leung (2009) Instant Messaging's (IM) study in China, among teenagers in grades 7 through 12 (ages 12 to 19 years old), found that not only was age a significant negative predictor of IM use, it also was a strong positive predictor of IM addiction. Huang and Leung (2009) proposed that such an outcome could be that younger teenagers, who lack self-discipline, spent more time on IM than older teenagers. Older teenagers, conversely, with more interpersonal issues (e.g., relationship, difficulty talking to others in person) might be more susceptible to use IM to share/resolve them, which, in turn, lead to online chatting addiction.

In summary, Andreassen et al. (2017) found that age was inversely correlated with addictive use of technology. The older the adults, the less likely they will become addicted to technological use (Andreassen et al., 2017). One explanation for such an outcome may be that younger adults are more willing to explore and try new technologies and platforms, as compared to older adults (Andreassen & Pallesen, 2014). Similarly, an age-restricted college study found age to be negatively correlated with social media (Sheldon, 2008). More specifically, Sheldon (2008) suggested that because younger college students were more likely to use Facebook to maintain relationships as compared to older respondents, they would be more susceptible to social media addiction, as compared to older respondents. It was, nevertheless, important to note that when college students' ages were examined against different Facebook-use characteristics, no

significant correlations were found (Koc & Gulyagci, 2013). Finally, Huang and Leung (2009) found that age was a significant positive predictor of IM addiction among older teenagers, and a negative predictor of IM use among younger teenagers. More specifically, they proposed that older teenagers with interpersonal issues might be more susceptible to resolving them via online chatting platforms, whereas younger teenagers with a lack of self-discipline might spend more time on IM than older teenagers (Huang & Leung, 2009).

Beside age and gender, current living situation and marital status also were found to be related to Internet addiction (Sahraian et al., 2016). Students who resided with family members and students who were single scored higher on the IAT as compared to students who resided on a school campus or students who were married (Andreassen et al., 2017; Sahraian et al., 2016). Sahraian et al. (2016) suggested that low levels of independence, competency, and socialization skill could account for higher susceptibility to Internet addiction among students. Other demographic factors such as a student's race, ethnicity, parental education level, and income level were found to be unrelated to the addictive use of SNS (Hargittai, 2007; Koc & Gulyagci, 2013).

Adjustment Variables

In addition to demographic factors, it is important to note that individuals' adjustments/characteristics (i.e., shyness, school, academic functioning, sleep quality, and personality traits) also are related to Internet/social media use.

Shyness. Shyness can be defined as:

the tendency to feel awkward, worried or tense during social encounters, especially with unfamiliar people. Severely shy people may have physical symptoms like blushing, sweating, a pounding heart or upset stomach; negative feelings about themselves; worries about how others view them; and a tendency to withdraw from social interactions ("Shyness," 2017).

Prior studies found that shyness was significantly associated with social media/Internet addiction; as ratings on the shyness scale increased, individuals' addiction to social media/Internet use also increased (Ayas, 2012; Chak & Leung, 2004; Hollingsworth, 2005; Huang & Leung, 2009). In a teenage sample drawn by Huang and Leung (2009) in China, a significant association was found between level of IM addiction and shyness. More specifically, the shyer the teenager, the increased probability of the teenager becoming addicted to Internet use (e.g., online communication media). In addition, Huang and Leung (2009) discovered that not only was shyness a significant predictor of IM addiction, it also was an essential factor to discriminate IM addiction users from nonaddicted users.

Consistent with Huang and Leung's (2009) study, Ayas' (2012) random sampling study of high school students also identified a significant correlation between Internet addiction and shyness level. As was noted in Ayas' (2012) study, human beings are social organisms and relationships with one another are essential for social wellbeing. Shyer individuals, therefore, having difficulties with face-to-face communication, may turn to the Internet for assistance. More specifically, Ayas (2012) found that the shyer the high

school student, the use of the Internet as a means of communication (i.e., thoughts and feelings) also increased.

In addition, in their study, Chak and Leung (2004) found similar results to that of Huang and Leung (2009) and Ayas (2012), in that, the shyer the individual, the higher the tendency for addictive Internet use. Interestingly, Chak and Leung's (2004) research further revealed that among the shy participants, shy male individuals did not display more online social media interaction (e.g., email, chatroom) than offline communication, despite statistically significant positive association between level of shyness and Internet addiction. This outcome enabled Chak and Leung (2004) to postulate that shy male participants did not find it easier to communicate online as compared with offline, and, also, the association with Internet addiction might not be attributable to social media applications, but rather, some other uses, such as recreational activities on the Internet (e.g., watch online movies, or do leisure searches).

Not all studies, however, supported the association of social media/addictive Internet use with shyness. For example, one study with 53 middle school students and 159 post-secondary students discovered that shyness was a strong predictor of Internet addiction in middle school students, but not among the post-secondary students (Hollingsworth, 2005). More specifically, Hollingsworth (2005) found that, unlike middle school students, the amount of time spent on the Internet was the contributing factor to Internet addiction among post-secondary students, as compared to shyness. This outcome suggests that educational level could affect the relationship between shyness and Internet abuse among teenagers.

Overall, it was found that shyness is positively correlated with social media/Internet addiction, with the shyer the individual, the higher the tendency of addictive Internet use (Ayas, 2012; Chak & Leung, 2004; Hollingsworth, 2005; Huang & Leung, 2009). It is important, however, to note that in the Chak and Leung (2004) study, unlike shy female participants, the association with Internet addiction among the shy male participants might not be attributable to social media, but rather, to recreational activities on the Internet. Furthermore, educational level also was found to affect the relationship between shyness and Internet abuse among teenage students. Specifically, unlike middle school students, Internet addiction among post-secondary students appeared to be attributed to Internet-usage time (Hollingsworth, 2005).

Academic habits and achievement. College adjustment, according to Zea, Jarama, and Bianchi (1995), is defined as “remaining in college, enjoying psychological well-being, and performing well academically” (p. 511), and academic adjustment, on the other hand, is defined as “the degree to which the student is able to cope with the educational demands associated with college” (Watson, 2009, p. 128). Previous research has found that high intensity of social media/Internet use is negatively correlated with academic performance (e.g., time spent studying, grade point average [GPA] score) (Huang & Leung, 2009; Kirschner & Karpinski, 2010), and interpersonal relationships with others (Huang & Leung, 2009; Whang, Lee, & Chang, 2003).

Koc and Gulyagci's (2013) study revealed significant differences in terms of Facebook-use characteristics (i.e., time spent on Facebook weekly and use for academic purpose) and gender among 447 college students. More specifically, men were found to

spend longer hours on leisure activities on Facebook than women, and conversely, women spent more time on academically-related activities on Facebook (e.g., I use Facebook to share assignments with my friends) than men. Koc and Gulyagci (2013), therefore, proposed that individuals who spend more time on social media for leisure activities, will, in turn, spend less time on academic studies (Koc & Gulyagci, 2013).

Additionally, Kirschner and Karpinski's (2010) study of 219 university students on Facebook usage found that students who were Facebook users generally spent less time studying and had lower GPAs, as compared to students who did not use Facebook. Kirschner and Karpinski (2010) suggested that students (i.e., Facebook users) who used the Internet for studying or research might be distracted by social media sites, thus resulting in less study time and poorer overall academic grades compared to nonuser students.

In the same vein, Huang and Leung (2009) discovered that lack of control was a strong predictor of students' decrement in academic performance. Consistent with Kirschner and Karpinski's (2010) study on the potential distraction of Facebook, Huang and Leung (2009) found that teenage students who had weaker control over their time, displayed less self-discipline and, in turn, spent more time on IM and neglected their homework. This outcome enabled Huang and Leung (2009) to propose that students with less self-discipline displayed poorer overall academic performance as compared to students who had higher self-discipline.

In addition to the relationship between school/academic performance and Internet/social media addiction, social adjustment also was found to be related to Internet

addiction. In Whang et al.'s (2003) wide-age span Korean study, 3.5% of all participants were identified as Internet addicts (IA). Those who were identified as IA displayed higher scores on dysfunctional social adjustments (such as escape from reality, higher degree of loneliness, greater attempts to use the Internet when stressed or depressed) and lower capability to handle interpersonal conflicts as compared with non-IA (Whang et al., 2003). These findings may suggest that IA individuals having difficulty dealing with interpersonal relationship with family members and friends, may be highly susceptible to having trouble adjusting to college life.

In summary, prior studies (e.g., Huang & Leung, 2009; Kirschner & Karpinski, 2010) revealed consistent results in the examination of the relationship between social media/Internet usage and academic/school performance. A negative correlation between social media/Internet use and academic performance was evident. College students who were active Facebook users, generally spent less time studying and attained lower GPAs as compared with nonuser students (Kirschner & Karpinski, 2010). Further, men spent longer hours on social media (i.e., Facebook) than women, and women, on the other hand, spent more time on academically-related activities on social media than men (Koc & Gulyagci, 2013). More importantly, it was proposed that college/teenage students who used the Internet for studying or research, or students with lack of self-control, might be easily distracted by social media sites, which, in turn, resulted in poorer academic grades as compared to students who did not use social media (Kirschner & Karpinski, 2010) or students with higher self-discipline (Huang & Leung, 2009). Also, IA individuals having

difficulty dealing with interpersonal relationships with others (Whang et al., 2003), might be highly susceptible to having trouble adjusting to college life.

Sleep quality. Even though sleep quality is a difficult construct to define and measure, sleep quality can be identified as the “quantitative aspects of sleep, such as sleep duration, sleep latency, or number of arousals, as well as more purely subjective aspects, such as depth or restfulness of sleep” (Buysse, Reynolds, Monk, Berman, & Kupfer, 1989, p. 194). Negative correlations have been found between bedtimes and rising times, and college students’ intensive Facebook use (Andreassen, Torsheim, Brunborg, & Pallesen, 2012). Using the Bergen Facebook Addiction Scale (BFAS), Andreassen et al. (2012) found that long hours of Facebook usage interfered with going to bed and waking up among college students. Specifically, when college students spent more time on Facebook, they tended to go to bed late and wake up later, thereby, resulting in a delayed sleep-wake circadian rhythm.

In addition to sleep-wake circadian rhythm delay, a significant positive association between college students’ daytime dysfunction (due to sleep issues) and Facebook addictive use was discovered (Wolniczak et al., 2013). Wolniczak et al. (2013) found that Facebook dependent students displayed 1.3 times greater prevalence of poor sleep quality than nondependent individuals (i.e., after controlling for variables such as age, gender, and number of years in the academic program). Such an outcome enabled Wolniczak et al. (2013) to propose that college students might use their sleeping time to engage in Facebook’s leisure activities (e.g., chatting with friends, playing online games), which, in turn, disrupted their sleeping pattern, and, hence, daytime functioning.

Additionally, sleep disturbances and sleep quality also were found to be associated with social network dependence and students' satisfaction with school (Vernon, Barber, & Modecki, 2015). Results gathered from 1,886 adolescent students, aged 12 through 18 years old, suggested that students who reported high levels of social media dependence (e.g., I prefer to spend time on SNS rather than attend social activities/events) had more sleep disturbance issues (e.g., how often have you arrived late to class because you overslept?), which, in turn, were associated with poorer sleep quality (e.g., how often have you had a good night's sleep?) and lower school satisfaction level (Vernon et al., 2015).

Overall, research has found that students who spent long hours on Facebook had significant delayed bedtimes and wake up time (Andreassen et al., 2012). In addition, college students who were dependent on social media (i.e., Facebook) exhibited 1.3 times greater prevalence of poor sleep quality associated with daytime dysfunction (e.g., trouble staying awake while engaging in activity or difficulty maintaining enthusiasm to get things done) as compared to nondependent individuals (Wolniczak et al., 2013).

Personality traits. Relationships among personality traits and intensity of Internet use also have been found. "Personality may be viewed as a constellation of dispositional traits, characteristic adaptations, and integrative life stories situated in time and culture" (McAdams & Olson, 2010, p. 536) and is usually broken down into five broad components: openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism (McCrae & Costa, 2008).

In a research study exploring Facebook addiction and personality traits using the NEO-Five Factor Inventory (NEO-FFI), Andreassen et al. (2012) found that neuroticism and extraversion both correlated positively with Facebook addiction. One main explanation for the positive correlation between neuroticism and Facebook addiction might be that college students use social media as a means to seek companionship and moral support that are absent in their physical world (Kuss & Griffiths, 2011). On the other hand, Kuss and Griffiths (2011) also suggested that the positive correlation between extraversion and Facebook addiction could be due to college students using Facebook as an additional social tool to make more friends, rather than as an alternative to social activities.

Furthermore, a negative correlation between conscientiousness and Facebook addiction among college students was found (Andreassen et al., 2012). Andreassen et al. (2012) proposed that Facebook addiction was negatively correlated with being conscientious because highly conscientious students viewed Facebook and other social media as less important in their life, and they were capable of prioritizing other aspects of their life (e.g., school work or meeting deadlines) over Facebook. Finally, openness to experience and agreeableness revealed no statistically significant correlation with Facebook addiction (Andreassen et al., 2012).

Stieger, Burger, Bohn, and Voracek (2013) also discovered significant positive correlation between Internet addiction and neuroticism, and significant negative correlations between extraversion, conscientiousness, and openness to experience, and Internet addiction, but no statistically significant correlation between agreeableness and

Internet addiction (Stieger et al., 2013). In contrast to Andreassen et al.'s (2012) findings, Stieger et al. (2013) suggested that the negative correlation between extraversion and Internet addiction was because highly extraverted individuals would more likely have high sociability, and, thus, prefer to interact in person rather than online, which, in turn, resulted in significantly reduced Internet usage time.

Sahraian et al. (2016), however, found that only neuroticism was positively correlated with Internet addiction, whereas agreeableness, conscientiousness and extraversion were found negatively correlated with the Internet addiction, and openness to experience, to have no statistically significant correlation with Internet addiction among the medical student participants.

Social media addiction also was found to be positively correlated with narcissism (Andreassen et al., 2017). Andreassen et al. (2017) speculated that individuals with high narcissism use social media platforms, such as Facebook, Instagram, and Snapchat, to gather instantaneous feedbacks from large groups of audiences to satisfy their need for confirmation from others. These ego-boasting activities, in turn, might explain the positive correlation between elevated narcissistic traits and excessive social media usage (Andreassen et al., 2017).

Overall, prior studies have found neuroticism to be positively correlated with Facebook/Internet addiction, and conscientiousness to be negatively correlated with Facebook/Internet addiction (Andreassen et al., 2012; Sahraian et al., 2016; Stieger et al., 2013). The positive correlation between neuroticism and social media addiction might suggest the need to seek support and relationships that are absent in the physical world

(Andreassen et al., 2012) or to cope with stressful situations (Sahraian et al., 2016). On the other hand, the negative correlation between conscientiousness and social media addiction might suggest that conscientious college students are capable of prioritizing other aspects of their life before Facebook/social media (Andreassen et al., 2012).

Extraversion, on the other hand, was positively correlation with Facebook addiction (Andreassen et al., 2012), but negative correlation with Internet addiction (Sahraian et al., 2016; Stieger et al., 2013). On the one hand, Andreassen et al. (2012) suggested that Facebook is used as an additional tool for high extraverted students to socialize and make more friends online. On the other, Stieger et al. (2013) postulated that highly extraverted individuals would most likely prefer to interact in person, as compared to online. Given that extraversion is positively correlated with Facebook addiction, and negatively correlated with Internet addiction, it could be hypothesized that the examination of difference platforms might affect the relationship between extraversion and Facebook/Internet addiction.

Finally, Andreassen et al. (2012) found that Facebook addiction displayed no statistically significant correlation with either openness to experience or agreeableness. Stieger et al.'s (2013) international study, however, found a statistically significant negative correlation between Internet addiction and openness to experience, but no statistically significant correlation between Internet addiction and agreeableness. Conversely, Sahraian et al.'s (2016) age-restricted Iranian study revealed opposite results; there was a statistically significant negative correlation between Internet addiction and agreeableness, and no statistically significant correlation between Internet addiction and

openness to experience (Sahraian et al., 2016). Given that these studies examined different age groups, cultures, and online platforms, it can be hypothesized that these differences might affect the relationship between online addiction (i.e., Internet, social media, and Facebook) and personality.

Summary

As technology advances, the number of individuals who use mobile devices to engage in communication and leisure activities via social media has increased tremendously (Kuss & Griffiths, 2011). Consistent with the increase in social media use, more individuals are becoming increasingly susceptible to social media addiction (Kuss & Griffiths, 2011). Indeed, approximately 4% of college students in the United States were addicted to the Internet (Christakis et al., 2011).

In examining the relationship between demographic factors and social media/Internet addiction, research within the U.S. found that women were more susceptible to social media addiction as compared to men (Hargittai, 2007; Sheldon, 2008). Contrastingly, recent studies in the Middle East found that male students spent more time on social media (Koc & Gulyagci, 2013), and they were more susceptible to Internet addiction than female students (Sahraian et al., 2016). Andreassen et al.'s (2017) finding, from a large national survey in Norway, indicated that women scored higher on addictive social media use as compared to men. They further proposed that women were more susceptible to social media addiction, and, on the other hand, men were more prone to online asocial activity.

Furthermore, in an age-restricted college study, Sheldon (2008) found a negative correlation between age and addictive use of social media; younger college students who spent more time on social media, as compared to older college students, tended to use Facebook to meet new people and to maintain relationships. On the other hand, Koc and Gulyagci's (2013) Turkish college study found no significant correlations when age was measured against Facebook-use characteristics.

In addition, relationships between adjustment factors and social media/addictive Internet use have been examined. These adjustment variables include shyness, school/academic, sleep quality and personality traits. Ayas (2012), Chak and Leung (2004), Hollingsworth (2005), and Huang and Leung (2009) found that shyness was positively correlated with social media/Internet addiction, in that the shyer the individual, the higher the tendency for addictive Internet use. In addition, Chak and Leung (2004) found that this relationship was associated with gender; unlike female teenagers, male teenagers did not demonstrate more online social interaction despite high levels of shyness (Chak & Leung, 2004).

Furthermore, a negative correlation was found between social media/Internet usage and academic/school performance. College students who were active users on Facebook spent less time studying and attained lower GPAs compared to nonuser students (Kirschner & Karpinski, 2010). Also, men spent longer hours on leisure activity on social media (i.e., Facebook) than women, and women, on the other hand, spent more time on academically-related activities on social media than men (Koc & Gulyagci, 2013).

Sleep quality also was found to be negatively correlated with social media/Internet use. Andreassen et al. (2012) found that college students who spent long hours on Facebook had significant delayed bedtimes and wake up times. In addition, individuals who were found to be dependent on social media (i.e., Facebook) exhibited 1.3 times greater prevalence of poor sleep quality and had impaired daytime functioning (due to sleep issues), as compared to nondependent individuals (Wolniczak et al., 2013).

Finally, personality traits also were related with social media/Internet addiction. More notably, prior studies have found neuroticism to be positively correlated with Facebook/Internet addiction, and conscientiousness to be negatively correlated with Facebook/Internet addiction (Andreassen et al., 2012; Sahraian et al., 2016; Stieger et al., 2013). Extraversion, on the other hand, showed a positive correlation with Facebook addiction (Andreassen et al., 2012), but a negative correlation with Internet addiction (Sahraian et al., 2016; Stieger et al., 2013). Further, Andreassen et al. (2012) found no statistically significant correlations between Facebook addiction and openness to experience, and agreeableness. Other studies, on the other hand, found openness to experience (Stieger et al., 2013) and agreeableness (Sahraian et al., 2016) to be negatively correlated with Internet addiction.

Overall, with the evolving of social media platforms, increasing numbers of individuals are now able to stay connected over the Internet more effortlessly. This, at the same time, however, has given rise to an increase in the prevalence rate of addictive social media use (Kuss et al., 2014). More importantly, given the evolving social media platforms use, minimum research has been conducted to examine the relationship of

addictive social media use with adjustment. Taking into consideration that prior studies have mainly focused their research on Internet addiction, social media addiction, and Facebook addiction, this study focused its examination on another underexplored platform (i.e., digital content sharing). It also is possible that other variables (e.g., homesickness level and affectivity [positive or negative]) that have not been addressed from past research could be related to college students' disordered use of Instagram.

Purpose of Study and Hypotheses

The main purpose of this study was to examine the correlates of social media use, specifically Instagram, among college students. Not only is Instagram the 2nd most used social media application in the U.S. (Greenwood & Perrin, 2016), it was ranked the 2nd largest growing social media after Facebook in the U.S. in 2014 (Loechner, 2015). Even so, limited research has been done on Instagram.

Prior researchers have focused their examination on addictive Internet use (Sahraian et al., 2016), social media addiction (Andreassen et al., 2017; Hargittai, 2007), and Facebook addiction (Andreassen et al., 2012; Koc & Gulyagci, 2013; Sheldon, 2008; Stieger et al., 2013). Among these studies, mixed outcomes were evident in terms of cultural, gender, and platform differences regarding individuals' adjustments. For example, women, within the U.S. were found to be more susceptible to social media addiction as compared to men (Hargittai, 2007); men, in the Middle East, however, were more likely to be addicted to Internet use (Sahraian et al., 2016). In relation to personality traits, extraversion was found to correlate positively with Facebook addiction

(Andreassen et al., 2012), but was found to correlate negatively with Internet addiction (Sahraian et al., 2016).

Thus, in this study, we intended to eliminate and minimize the effect of these confounds by examining a U.S. sample with an age-restricted group (i.e., college students aged 18 to 26 years old). In addition, we sought to examine variables (such as homesickness level and affectivity) that were unexplored by past studies on college students' social media addictive use.

More importantly, no prior research had been conducted on the disordered use of Instagram. This research, therefore, was a novel examination on the relationship between Instagram, a digital content sharing platform, and adjustment factors among college students. To examine the relationship between social media use (i.e., Instagram) and adjustment factors, the following hypotheses were offered:

Hypothesis 1: The linear combination of gender, education level, and age would be a significant predictor of disordered Instagram use among college students.

- (a) It was hypothesized that women, students with lower educational level (i.e., freshmen year), and younger adults (i.e., 18 to 20 years old) would score higher on the SMD-I (Social Media Disorder-Instagram) Scale as compared to men, nonfreshmen, and older adults (i.e., age 21 to 26 years old).

Hypothesis 2: Significant correlation between adjustment factors (shyness, school/academic functioning, and sleep quality) and Instagram use would emerge among college students.

- (a) It was hypothesized that college students who scored higher on the SMD-I Scale would score higher on shyness.
- (b) It was hypothesized that college students who scored higher on the SMD-I Scale would score higher on homesickness.
- (c) It was hypothesized that college students who scored higher on the SMD-I Scale would score higher on negative affect.
- (d) It was hypothesized that college students who scored higher on the SMD-I Scale also would show increased number of missed classes.
- (e) It was hypothesized that college students who scored higher on the SMD-I Scale would score lower on student's positive affect.
- (f) It was hypothesized that college students who scored higher on the SMD-I Scale would spend fewer numbers of hours per week studying.
- (g) It was hypothesized that college students who scored higher on the SMD-I Scale would score lower on total GPA.
- (h) It was hypothesized that college students who scored higher on the SMD-I Scale also would have poorer overall sleep quality.

Hypothesis 3: Significant correlation between personality traits and Instagram use would emerge among college students.

- (a) It was hypothesized that college students who scored higher on the SMD-I Scale would score higher on neuroticism.
- (b) It was hypothesized that college students who scored higher on the SMD-I Scale also would score higher on extraversion.
- (c) It was hypothesized that college students who scored higher on the SMD-I Scale would score lower on openness to experience.
- (d) It was hypothesized that college students who scored higher on the SMD-I Scale would score lower on agreeableness.
- (e) It was hypothesized that college students who scored higher on the SMD-I Scale would score lower on conscientiousness.

CHAPTER II

METHOD

Participants

There were 181 participants recruited through the psychology research pool at Middle Tennessee State University (MTSU). This participant sample was restricted to college students who were between 18 and 26 years old and those who have ever used an Instagram application. Two participants in the sample withdrew after filling out the demographic survey. One of the participants answered "never" to the question pertaining to Instagram use; one submitted an incomplete survey without answering the SMD-I Scale. Data from these four participants, therefore, were deleted from all analyses. In exchange for their participation, participants were given research credit for their psychology classes. Prior to data collection, this study gained approval from the Institutional Review Board (IRB) at MTSU (see Appendix A).

In this study, data from 177 participants (126 women and 50 men, and one participant chose "Other/Choose not to answer") were analyzed. As shown in Table 1, the majority of the participants were single (94%), many were freshmen (49%), and between 18 and 20 years old (80%). Many of them also were living on campus or noncampus apartment or house (57%).

Materials

Demographic form. The author-constructed demographic form, as seen in Appendix B, contained the following items: gender (Male, Female, and Other/ Choose not to answer); age (i.e., 18 to 20; 21 to 23; 24 to 26); educational level (Freshman,

Table 1
Demographic Information

Variable	<i>n</i>	%
Gender		
Male	50	28.25
Female	126	71.19
Other/Choose not to answer	1	0.56
Age (in years)		
18-20	142	80.23
21-23	30	16.95
24-26	5	2.82
Education Level		
Freshman	86	48.59
Sophomore	57	32.20
Junior	25	14.12
Senior	9	5.08
Marital Status		
Single	167	94.35
Married	3	1.69
Other	7	3.95
Current Living Situation		
Staying with parents	71	40.11
Campus/Noncampus apartment or house	101	57.06
Other	5	2.82

Note. $N = 177$.

Sophomore, Junior, and Senior); marital status (Single, Married, and Other); current living situation (Staying with parents, Campus/Noncampus apartment or house, and Other); Instagram use (No; Yes, in the past[not in the past week]; and Yes, currently [in the past week]); last use of Instagram (e.g., less than 1 week ago, 1 week but less than 1 month ago, 1 month but less than 3 months ago, 3 months but less than 6 months ago, 6 months but less than 9 months ago, 9 months but less than one year ago, one year but less than two years ago, two years but less than three years ago, three years ago or more, never); frequency of Instagram use (Very seldom[once a week], Seldom[couple of times a week], Often[once a day], Very often[more than twice a day]); and intensity of Instagram use per day, (e.g., less than 15 minutes, 15 to 30 minutes, 31 minutes to 1 hour, more than 1 hour but less than 2 hours, more than 2 hours but less than 3 hours, more than 3 hours).

Revised Cheek and Buss Shyness Scale (RCBS). The RCBS is a 13-item measure developed by Cheek (1983) and used to examine shyness; it was based upon the original 9-item measure of shyness and sociability (Cheek & Buss, 1981). The RCBS uses a 5-point Likert-type scale to measure the extent to which each item is characteristic of respondents on a range of 1 (*Very uncharacteristic or untrue, strongly disagree*) to 5 (*Very characteristic or true, strongly agree*) (Cheek, 1983). The RCBS has an excellent internal consistency ($\alpha = .90$), a strong 45-day test-retest reliability ($r = .88$), and strong correlation with the original 9-item version ($r = .96$) (Cheek, 1983). Furthermore, Hopko, Stowell, Jones, Armento, and Cheek (2005) also noted RCBS's well established convergent validity indicated by strong correlations with the Social Reticence Scale-II

(SRS-II), $r = .79$, the Social Avoidance and Distress Scale (SADS), $r = .77$, and the Shyness Questionnaire (SQ), $r = .74$.

Academic habits and achievement. This included an author-constructed 2-item survey regarding participants' academic habits. As shown in Appendix C, they included how many class sessions did the students typically miss per week for all of their classes combined (0 to 2; 3 to 5; 6 to 8; 9 or more), and how many hours, in total, did the students spend studying each week outside of class (0 to 2; 3 to 5; 6 to 8; 9 or more). Academic achievement also was examined by asking respondents to provide their current or estimated college GPA (0 to 1.9; 2.0 to 2.9; 3.0 to 4.0). See Appendix C.

College Adjustment Test (CAT). CAT is a 19-item college adjustment survey designed to measure student's coping ability in the past week (Pennebaker, Colder, & Sharp, 1990). CAT measures three specific aspects of college adjustment (i.e., positive affect, negative affect, and homesickness) and yields an overall adjustment score. Each question is measured along a 7-point Likert-type scale ranging from 1 (*not at all*) to 7 (*a great deal*). According to two college samples, the CAT showed good internal consistency ($\alpha = .79$); the 2-month test-retest reliability was .65 (Pennebaker et al., 1990).

Pennebaker et al. (1990) conducted factor analyses and found three stable factors accounting for 46% of the variance; these factors were positive affect (e.g., "liked your classes," "liked your social life," and "felt optimistic about your future in college"), negative affect (e.g., "worried about how you will perform academically," "worried about the way you look," and "felt anxious or nervous"), and homesickness (e.g., "missed your friends from high school," "missed your home," and "felt lonely"). Evidence of

convergent validity also has been established. The positive affect subscale of the CAT was found to be positively correlated with the Academic Adjustment Scale (AAS), $r = .34$ (Anderson, Guan, & Koc, 2016).

Pittsburgh Sleep Quality Index (PSQI). PSQI was developed by Buysse et al. (1989) to assess sleep quality and disturbances over a 1-month time interval. The 19 questions were grouped into seven different components. These were sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction (Buysse et al., 1989). Each item was measured on an interval scale from 0 to 3. The seven component scores were summed to yield a global PSQI score (with a range of 0 to 21). The higher the score, the poorer the sleep quality (Buysse et al., 1989). Overall, the global score of the PSQI has a high degree of internal consistency with an alpha coefficient of .83 (Buysse et al., 1989).

In addition, the correlations between component scores and the PSQI global score fell within the moderate to strong range ($r = .62 - .85$), except for sleep disturbance ($r = .46$) (Buysse et al., 1989). Furthermore, individual items in the global scale also showed strong correlation with one another, indicated by a high reliability coefficient ($\alpha = .83$).

In Buysse et al.'s (1989) study, 91 patients completed the PSQI on two separate occasions to measure test-retest reliability (i.e., 18-month interval). Paired t -tests for global PSQI score and the seven component scores indicated no significant difference between the two occasions. Global PSQI scores had a strong correlation between the two occasions ($r = .85$), and the component scores coefficients ranged from .84 (sleep latency) to .65 (use of sleeping medication) (Buysse et al., 1989). Significant correlations

also were found between global PSQI scores and component scores across time, with global PSQI's coefficient $> .40$, and component scores' coefficients $> .35$.

Buysse et al.'s (1989) support for validity relied on the comparison of four groups of participants: the control group, depressive group, disorders of initiating and maintaining sleep (DIMS) group, and disorders of excessive somnolence (DOES) group. These four groups were assessed based on their sleep quality, clinical interviews, and polysomnographic studies. A global PSQI score > 5 is an indication of poor sleep quality. Distinct component score profiles also emerged for patients of different groups (control, depressive, DIMS, DOES).

Furthermore, Grandner, Kripke, Yoon, and Youngstedt (2006) found significant correlations between the PSQI global score and subjective estimates of sleep (using sleep diary). They found that slightly more than one-third of both healthy younger (age 18 to 32 years old) and older (59 to 75 years old) groups met PSQI criteria for poor sleep quality (Grandner et al., 2006).

Big Five Inventory (BFI). The BFI is a 44-item survey developed by John, Donahue, and Kentle (1991) with the aim to create an efficient and flexible inventory to assess the five dimensions of personality. The 44-item survey consists of extraversion (8 items), agreeableness (9 items), conscientiousness (9 items), neuroticism (8 items), and openness to experience (10 items). The 44 items uses 5-point Likert-type scales ranging from 1 (*Disagree strongly*) to 5 (*Agree strongly*) to indicate the extent to which respondents agree or disagree with the statement. Rammstedt and John (2007) found strong internal consistency of BFI scales with reliability alpha level between $.79$ and $.87$.

Furthermore, test-retest reliability of BFI scales also has been established. After an 8-week interval, test-retest reliability on the BFI scales indicated a range of .65 to .79, with overall mean of .83 (Rammstedt & John, 2007).

Validity has been established between BFI self-reports and BFI peer ratings, with a moderate correlation strength of .47 to .67 across all five personality traits (John et al., 1991). John et al. (1991) also found uncorrected convergent validity between BFI and Trait Descriptive Adjectives (TDA), with strong positive correlations across scales (r ranged from .75 to .90). Additionally, Rammstedt and John (2007) found BFI self-peer convergent validity correlations to be moderately strong across two different U.S. samples, with mean $r = .53$ and $.52$ respectively. Finally, strong convergent validity correlations ($r = .78$) also were found between the BFI scale and the NEO Personality Inventory Revised (NEO-PI-R).

The Social Media Disorder (SMD) Scale. The 9-item SMD Scale developed by van den Eijnden, Lemmens, and Valkenburg (2016) was derived from the criteria of the Internet gaming disorder in the *DSM-5* (American Psychiatric Association, 2013). According to van den Eijnden et al. (2016), the SMD Scale was designed to measure social media addiction among online users and to distinguish between disordered (i.e., addicted) and high-engaged nondisordered social media users. Each of the 9 items on the scale are measured dichotomously (i.e., *yes or no*). To meet the diagnosis of ‘disordered social media user,’ a minimum of five of the nine criteria must be met. van den Eijnden et al. (2016) also stated that this short SMD Scale displayed strong correlation with the 27-item SMD Scale ($r = .89$) and demonstrated good reliability (Cronbach alpha = .81). In

addition, 2-month test-retest reliability of the 9-item SMD Scale assessed among 238 adolescents also showed a moderate degree of reliability ($r = .50$) (van den Eijnden et al., 2016).

Furthermore, van den Eijnden et al. (2016) found that the 9-item SMD Scale showed positive correlation with compulsive Internet use ($r > .50$) and self-identified social media addiction ($r > .48$); this suggests adequate convergent validity. Criterion validity also has been established; the 9-item SMD Scale was found to be negatively correlated with self-esteem ($r = -.19$) and positively correlated with attention deficit, depression, impulsivity, loneliness, and frequency of daily social media use and posts ($r = .24$ to $.51$; van den Eijnden et al., 2016).

Taken into consideration that the SMD Scale was intended to measure social media use (e.g., Facebook, Instagram, Twitter, Snapchat), in general, the scale items were modified (i.e., SMD-I) to match the current study's objective. More specifically, the SMD Scale items were changed from "social media" to "Instagram." Furthermore, because no U.S. studies have been conducted using this newly developed SMD Scale, this was a pioneer study to use the SMD-I Scale to examine Instagram use.

Procedure

To take part in this online survey, participants had to be between 18 and 26 years old and have signed up with the MTSU Sona system. Prior to completing the online survey, participants were asked to provide their informed consent. See Appendix D. Thereafter, the participants were requested to fill out a demographic form, followed by a number of surveys in the following order: Revised Cheek and Buss Shyness (RCBS)

scale (Cheek, 1983), study habit and academic achievements, College Adjustment Test (Pennebaker et al., 1990), Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1989), the Big Five Inventory (BFI; John et al., 1991), and the modified Social Media Disorder (SMD) Scale (i.e., SMD-I; van den Eijnden et al., 2016). After completion of the survey, participants were directed to a debriefing page in which the researcher's contact information was provided, in case any clarification was required. See Appendix E. In addition, if the participants wanted a copy of the study's results, they could contact the researcher via his email address to make further arrangement. Research credit also was automatically rewarded to participants.

CHAPTER III

RESULTS

Descriptive Statistics and Analytic Plan

Descriptive statistics for Instagram use are presented in Table 2; information about academic habits and achievement are shown in Table 3. Means and standard deviations for the other adjustment measures are presented in Table 4. The internal reliability coefficients also can be seen in Table 4. Most of them are found to be in an acceptable range, except for positive affect, homesickness, PSQI, conscientiousness, and SMD-I Scale. Inter-correlations among all the adjustment measures were performed and can be seen in Table 5.

In addition, other preliminary examinations were done on the dependent variables. Specifically, gender differences among dependent variables were examined. As seen in Table 6, there were statistically significant gender differences in neuroticism, agreeableness, and SMD-I. Gender, therefore, was controlled for in the relevant analyses.

Hypotheses Testing

Firstly, it was predicted that women, freshman, and younger adults (age 18 to 20 years old) would score higher on SMD-I Scale as compared to men, nonfreshman (i.e., sophomore, junior, and senior year combined), and older adults (age 21 to 26 years old). This hypothesis was tested using regression analysis. The results showed the linear combination of gender, age, and education level was not a significant predictor of disordered Instagram use, $F(3, 172) = 2.23, p = .09$. Within the regression model, however, when examined independently, gender was found to be a statistically significant

Table 2

Descriptive Statistics for Instagram Use in this Sample

Variable	<i>n</i>	%
Instagram Use		
Yes, in the past (Not in the past week)	12	6.78
Yes, currently (In the past week)	165	93.22
Last Use of Instagram		
Less than 1 week ago	166	93.79
1 week but less than 1 month ago	3	1.69
1 month but less than 3 months ago	1	0.56
3 months but less than 6 months ago	0	0.00
6 months but less than 9 months ago	1	0.56
9 months but less than one year ago	2	1.13
One year but less than two years ago	1	0.56
Two years but less than three years ago	3	1.69
Three years ago or more	0	0.00
Frequency of Instagram Use		
Very seldom (Once a week)	8	4.52
Seldom (Couple of times a week)	22	12.43
Often (Once a day)	35	19.77
Very often (More than twice a day)	112	63.28
Duration of Instagram use each day		
Less than 15 minutes	53	29.94
15 to 30 minutes	74	41.81
31 minutes to 1 hour	22	12.43
More than 1 hour but less than 2 hours	16	9.04
More than 2 hours but less than 3 hours	5	2.82
More than 3 hours	7	3.95

Note. *N* = 177.

Table 3

Descriptive Statistics for Academic Habits and Achievement

Academic Habits and Achievement	<i>n</i>	%
Classes Missed (per week)		
0 to 2	166	93.79
3 to 5	11	6.21
6 to 8	0	0.00
9 or more	0	0.00
Studying Time (hours/week)		
0 to 2	32	18.08
3 to 5	91	51.41
6 to 8	38	21.47
9 or more	16	9.04
College Grade Point Average (GPA)		
0 to 1.9	6	3.39
2.0 to 2.9	47	26.55
3.0 to 4.0	124	70.06

Note. $N = 177$.

Table 4

Descriptive Statistics for the Revised Cheek and Buss Shyness Scale, College Adjustment Test, Pittsburgh Sleep Quality Index, Big Five Inventory, and Social Media Disorder-Instagram Scale

Scales and Subscales	<i>M</i>	<i>SD</i>	<i>α</i>
Revised Cheek and Buss Shyness Scale	34.66	10.03	.89
College Adjustment Test			
Positive Affect	28.59	5.85	.69
Negative Affect	38.90	10.72	.83
Homesickness	24.80	6.54	.59
Pittsburgh Sleep Quality Index	6.90	3.12	.66
Big Five Inventory			
Extraversion	3.15	0.78	.85
Agreeableness	3.85	0.56	.76
Conscientiousness	3.42	0.47	.57
Neuroticism	3.11	0.76	.81
Openness	3.37	0.58	.74
Social Media Disorder-Instagram Scale	1.13	1.39	.61

Note. $N = 177$.

Table 5

Correlations Among all Adjustment Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Shyness	-												
2. Classes Missed	.02	-											
3. Studying Time	-.08	-.12	-										
4. CGPA	-.13	-.06	.19**	-									
5. Positive Affect	-.40***	-.09	.14	.12	-								
6. Negative Affect	.54***	.01	.07	-.21**	-.34***	-							
7. Homesickness	.28***	.02	.09	-.02	-.10	.58***	-						
8. PSQI	.40***	.13	.13	-.07	-.28***	.41***	.19**	-					
9. Extraversion	-.64***	.08	.13	.16*	.44***	-.40***	-.21**	-.35***	-				
10. Agreeableness	-.25***	-.08	.19*	.15*	.22**	-.20**	.01	-.21**	.25***	-			
11. Conscientious	-.25***	-.08	.14	.19*	.24**	-.26***	-.07	-.21**	.31***	.32***	-		
12. Neuroticism	.52***	.03	.03	-.08	-.47***	.67***	.34***	.47***	-.39***	-.19*	-.27***	-	
13. Openness	-.12	-.03	.09	-.03	.22**	-.07	-.03	-.02	.16*	.20**	.16*	-.01	-

Note. Shyness was measured by the Revised Cheek and Buss Shyness Scale. CGPA = College Grade Point Average. The positive affect, negative affect, and homesickness are subscales of the College Adjustment Test. PSQI = Pittsburgh Sleep Quality Index. Conscientious = Conscientiousness. Openness = Openness to Experience. The Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to experience are subscales of the Big Five Inventory.

$N = 177$.

* $p < .05$. ** $p < .01$. *** $p < .001$

Table 6

Examining Gender Differences for Social Media Disorder-Instagram Scale, Revised Cheek and Buss Shyness Scale, Academic Habits and Achievement, College Adjustment Test, Pittsburgh Sleep Quality Index, and Big Five Inventory

Subscale	Men		Women		t^a	df
	M	SD	M	SD		
SMD-I	0.74	0.85	1.28	1.53	-2.96**	154.77
Shyness	33.26	9.60	35.09	10.12	-1.12	94.62
Academic Habits and Achievement						
Classes Missed	1.08	0.27	1.06	0.23	0.56	77.83
Studying Time	2.06	0.77	2.27	0.87	-1.57	101.56
College GPA	2.60	0.61	2.69	0.51	-0.93	78.37
CAT						
Positive Affect	28.88	4.98	28.46	6.20	0.47	111.28
Negative Affect	36.54	10.57	39.79	10.70	-1.83	91.05
Homesickness	23.98	6.31	25.14	6.65	-1.09	94.48
PSQI	6.78	3.05	6.87	3.06	-0.18	90.55
Big Five Inventory						
Extraversion	3.22	0.74	3.14	0.78	0.67	94.93
Agreeableness	3.71	0.55	3.91	0.55	-2.18*	90.44
Conscientiousness	3.46	0.51	3.40	0.46	0.76	81.93
Neuroticism	2.78	0.69	3.23	0.75	-3.87***	96.46
Openness	3.42	0.48	3.34	0.62	0.93	113.85

Note. SMD-I = Social Media Disorder-Instagram Scale. Academic Habits and Achievement Subscales were analyzed in categories; refer to Table 3 for more information. College GPA = College Grade Point Average. CAT = College Adjustment Test. PSQI = Pittsburgh Sleep Quality Index. Openness = Openness to Experience $N = 176$.

^aSatterthwaite correction for unequal variance.

* $p < .05$. ** $p < .01$. *** $p < .001$.

predictor of Instagram use, $t(1) = 2.26, p = .03$, but not age, $t(1) = -0.84, p = .40$, or education level, $t(1) = 1.00, p = .32$.

In the second hypothesis, it was proposed that college students who scored higher on the SMD-I would score higher on shyness level, homesickness, negative affect, and increased number of missed classes, and would score lower on positive affect, number of hours spent studying, total GPAs, and sleep quality. This hypothesis was tested using Pearson correlations. The Bonferroni method was used on CAT subscales to control for multiple correlations. As shown in Table 7, shyness level (using $\alpha = .05$) and negative affect (using $\alpha = .0167$) had statistically significant positive relationships with disordered Instagram use. The PSQI (using $\alpha = .05$), also, had a statistically significant positive relationship with disordered Instagram use (higher PSQI scores indicate lower sleep quality). In addition, college GPA (using $\alpha = .05$) had a statistically significant negative relationship with SMD-I. Otherwise, no other significant relationships with disordered Instagram use were found.

It also was proposed that college students who scored higher on the SMD-I Scale would score higher on neuroticism and extraversion, and would score lower on openness to experience, agreeableness, and conscientiousness. This hypothesis also was analyzed using Pearson correlations, and the p -values were controlled for using the Bonferroni method with adjusted alpha levels of .01 per test. Only neuroticism demonstrated a statistically significant positive relationship with disordered Instagram use (see Table 8). Further, this relationship was still significant after controlling for gender, $F(1, 173) = 10.96, p = .001$.

Table 7

Correlations Between Social Media Disorder-Instagram Scale, and Revised Cheek and Buss Shyness Scale, Academic Habits and Achievement, College Adjustment Test, and Pittsburgh Sleep Quality Index

Subscale	SMD-I
Shyness	.31***
Academic Habits and Achievement	
Classes Missed	-.02
Studying Time	-.08
College GPA	-.15*
CAT ^a	
Positive Affect	-.15
Negative Affect	.23**
Homesickness	.13
PSQI	.21**

Note. SMD-I = Social Media Disorder-Instagram Scale. Academic Habits and Achievement Subscales were analyzed in categories; refer to Table 3 for more information. College GPA = College Grade Point Average. CAT = College Adjustment Test. PSQI = Pittsburgh Sleep Quality Index.

N = 177.

^aBonferroni adjusted α levels of .0167.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 8

Correlations Between Social Media Disorder-Instagram Scale and Big Five Inventory

Subscale	SMD-I
Big Five Inventory ^a	
Extraversion	-.07
Agreeableness	-.06
Conscientiousness	-.15
Neuroticism	.28**
Openness to Experience	-.12

Note. SMD-I = Social Media Disorder-Instagram Scale.

N = 177.

^aBonferroni adjusted α levels of .01.

** $p < .01$.

CHAPTER IV

DISCUSSION

In this study, 93% of the participants noted that they were currently using Instagram and had used it in the past week. In addition, 70% of them used Instagram for at least 15 to 30 minutes per day, and most of them reported using it more than two times each day (63%). Only approximately 7% of the participants in this study reported that they had not used Instagram in the past week. Considering the duration and frequency of Instagram use, this study, therefore, appears to be an appropriate sample for measuring the correlates of disordered Instagram use among college students.

Previous studies had focused largely on the relationship of adjustment with Internet addiction (Ayas, 2012), social media addiction (Kuss & Griffiths, 2011), and Facebook addiction (Andreassen et al., 2012). Due to the changes in social media platforms, however, individuals are engaging in the use of newer social media applications, such as Instagram, and are becoming increasingly susceptible to social media addiction (Kuss & Griffiths, 2011). Despite large user growth, Instagram has received little quantitative research attention. This research, therefore, attempted to investigate the relationship between disordered Instagram use and college students' adjustment (i.e., shyness level, adjustment to college, academic achievements, sleep quality, and personality traits).

The first hypothesis explored the linear combination of gender, education level, and age in predicting Instagram use among college students. There was, however, no statistically significant result. Within the regression model, when these variables were

examined independently, however, gender was found to be related to disordered Instagram use. Parallel with the findings of Hargittai's (2007) and Sheldon's (2008) U.S. studies, female college students in this study also scored higher on disordered Instagram use when compared to male college students. One possible reason might be that female college students were more active in terms of maintaining their existing relationship with friends, as compared to male counterparts.

Other than gender, no other demographic variables in this study were significantly correlated with disordered Instagram use. In contrast, Andreassen et al. (2017) found that older participants were less likely to become addicted to technologies. Similarly, Sheldon (2008) found that younger college students had a higher need to use Facebook to maintain their relationships as compared to older students. The current study, however, was more consistent with the finding of Koc and Gulyagci's (2013) study in which Facebook use was not dependent on students' age. The current study also found no relationship between age and education level with Instagram use, suggesting that disordered Instagram use may not be dependent on these demographic variables.

One possible explanation for these findings might be that this was an age-restricted study (between 18 and 26 years old), and there was an imbalance in the age ratio. Because there were very few students over 20 years old in this study, they were collapsed into one category to compare with students under 21 years old. After collapsing, overall, there were 80% participants in the 18 to 20 years old age range as opposed to just 20% in the 21 to 26 years range. It is, therefore, questionable as to whether the examination of older and younger participants in the current study was valid.

Another variable that was explored was shyness. This study's finding was congruent with prior research (e.g., Ayas, 2012; Chak & Leung, 2004; Hollingsworth, 2005; Huang & Leung, 2009). The current study found shyness level to be significantly positively related to disordered Instagram use in that the shyer the college student, the higher the susceptibility of becoming a problematic Instagram user. This finding may suggest that shy college students not only use Instagram as a means to communicate their thoughts and feelings (Ayas, 2012), but they also use it to stay connected with their friends when they have difficulty communicating in person.

The second hypothesis also explored the relationship between academic habits and achievement and disordered Instagram use. This study found CGPA to be statistically negatively correlated with disordered Instagram use. Such an outcome was consistent with Kirschner and Karpinski's (2010) study in which they found that students who were Facebook users attained lower GPAs compared to students who did not use Facebook.

On the other hand, although disordered use of Instagram was related to GPA, it was not statistically correlated with studying time and classes missed. Even though past studies have found addictive Internet use to be negatively correlated with studying time (Huang & Leung, 2009; Kirschner & Karpinski, 2010), this study did not. This may be because of differences in platforms. The Internet could serve as a medium for numerous addictive online activities (Griffiths, 1999); addictive Internet use, therefore, could detract from students' studying time. On the other hand, Instagram is a sole online application and has comparatively fewer functions that can be used. As such, this may explain why study time had a nonsignificant relationship with disordered Instagram use

in the current study. Furthermore, for the entire sample, the majority of the participants (69%) reported studying 0 to 5 hours each week outside of class, and only 31% of the participants noted studying at least 6 or more hours each week outside of class. Such an outcome suggests that studying time had limited variability; hence, it was difficult to discover any statistically significant relationships.

Students' adjustment to college also was explored in hypothesis two. The current research, based on the parallel findings of Whang et al.'s (2003) study, predicted that participants who scored higher on the SMD-I scale would experience more difficulty adjusting to college life. Negative affect was found to be statistically positively related to disordered Instagram use, but not positive affect nor homesickness. Such an outcome suggests that college students who spend more time on Instagram may experience more worries in terms of coping with college life (e.g., academic performance, relationships with others, how they look, impression they make on others). The results of the analyses involving homesickness and college students' positive experiences, on the other hand, suggest no relationships with problematic Instagram use. This suggests that individuals with these characteristics (homesickness and/or positive affect) may have different reasons for Instagram use. For example, an individual with a higher level of homesickness may spend more time on Instagram to stay connected with old friends and family members; whereas, someone with a lower level of homesickness may use Instagram as a tool for making friends. Similarly, an individual with a higher level of positive affect may choose to use Instagram as an additional tool to making friends;

whereas, someone with a lower level of positive affect may use Instagram as a main online platform for making friends and staying connected.

The relationship between college students' overall sleep quality and disordered Instagram use was examined. Wolniczak et al.'s (2013) and Vernon et al.'s (2015) studies suggested that the higher the dependency on social media use, the greater the prevalence of poor sleep quality. They proposed that students might use their sleeping time to engage in Facebook's leisure activities, which, in turn, disrupted their sleeping pattern. In line with their research, the current study also found poorer sleep quality to be associated with problematic Instagram use. This may imply that college students might use their sleeping time to engage in Instagram activity (e.g., looking at friends' pictures and videos), and, in turn, experience poorer overall sleep quality.

The third hypothesis in this study explored the relationship between personality traits and Instagram use. Regarding personality traits, only one statistically significant finding emerged. The current study found disordered Instagram use to be related to neuroticism, and not other personality traits. Even after controlling for gender, neuroticism remained significant in terms of its relationship with problematic Instagram use. This may imply that regardless if it is a man or a woman, higher disordered use of Instagram is related to being more neurotic.

Furthermore, the positive relationship between neuroticism and disordered Instagram use was consistent with Andreassen et al.'s (2012) Facebook study. Kuss and Griffiths (2011) proposed that college students with higher neuroticism scores use social media as a means to seek companionship and moral support that are absent in their

physical world. Consistent with the finding related to negative affect in this study, it is suggested that college students who spend more time on Instagram to stay connected with their friends and/or attempt to seek approval (of their lifestyle) from their peers (e.g., by posting pictures/stories and/or liking/commenting friend's pictures/stories) also may experience difficulty in terms of transitioning or coping with their college life.

In contrast, past studies found significant relationships between conscientiousness (e.g., Andreassen et al., 2012; Sahraian et al., 2016) and extraversion (e.g., Andreassen et al., 2012; Sahraian et al., 2016; Stieger et al., 2013) with Facebook/Internet addiction. This study, however, found no statistically significant relationships between conscientiousness and extraversion with disordered Instagram use. Kuss and Griffiths (2011) suggested that the positive correlation between extraversion and Facebook addiction could be due to college students using Facebook as an additional social tool for making more friends rather than as an alternative to social activities. This study, however, suggested otherwise; the nonsignificant relationship (between Instagram use and extraversion) may indicate that regardless of extraversion level, college students used Instagram both as an additional tool and an alternative application for making friends and staying connected.

Finally, past studies also found statistically significant negative correlations between openness to experience (Stieger et al., 2013) and agreeableness (Sahraian et al., 2016) with Internet addiction. This study, however, did not find any significant correlations between openness to experience and agreeableness with disordered Instagram use. This study's findings were congruent with Andreassen et al.'s (2012)

Facebook addiction study. Thus, the findings of this Instagram study were more similar to that of a Facebook study (e.g., Andreassen et al., 2012) than an Internet study (e.g., Sahraian et al., 2016) in terms of the relationship of personality with disordered Instagram use. This could suggest that the relationship between online addiction and personality may differ in accordance with the online platforms that were tested. Future researchers, therefore, could use this information to improve their studies by being cautious and specific when examining online platforms.

Despite its strengths, this study also was not without its limitations. The current study involved an age-restricted sample that only examined college students in one part of the U.S. This study did not take into account individuals from other age groups, as well as, other regions within and outside of the U.S. As such, the current study cannot be used to generalize to population of different ages, other regions within the country, and countries outside of the U.S. Indeed, most of the differences between the current study and previous studies may be due to sample differences (e.g., age, geographical region, cultural). Future studies, therefore, should take into account these variations.

Future studies hoping to build upon or improve upon the current study may incorporate the examination of different age groups, other demographic information (e.g., different cultures, socioeconomic status), and geographical areas within and outside of the U.S. By doing so, not only will it target specifically the disordered use of Instagram, it also improves the validity of Instagram studies. Considering that Instagram application is available in 36 different languages ("How do I Change My Language Setting," n.d.), it

provides a platform for researchers to examine and compare their findings on a global scale (e.g., cross-examine across countries).

In addition to sample issues, there also were measurement issues. Because this was one of the pioneer studies measuring Instagram addiction, there was no existing scale measuring the disordered use of Instagram. Thus, the SMD Scale by van den Eijnden et al. (2016) was modified to fit this study's objective (i.e., SMD-I). In doing so, several concerns were raised. The validity and the reliability of the SMD-I Scale was not previously tested. Therefore, it may not be a valid test of disordered Instagram use. Furthermore, the internal consistency of the SMD-I Scale was fairly low ($\alpha = .61$). This suggests that the SMD-I Scale may not be a reliable tool in terms of the items measuring the general construct (i.e., Instagram use). As no validity and other reliability tests were established on this modified scale, it is unclear if higher scores on the scale indicate higher addictive use of Instagram. It is, therefore, important for future researchers to explore the psychometric properties of the current scale or develop an original scale to measure addictive Instagram use.

Other limitations also were evident in this study. There was no baseline established in this research. The current study only included students who had used an Instagram application, and there was no inclusion of participants who did not have an Instagram account. If participants without an Instagram account are included, this study may be able to observe the "true relationship" between Instagram use and adjustment measures. One solution to resolve this issue is to establish a control group (e.g., measure college students who did not have an Instagram account) that can be used to measure

against the experimental group of this study, as well as, used to compare with prior studies.

Furthermore, the use of other social media applications (e.g., Facebook) also was not controlled for among the college students. Bearing in mind that some of the most frequently used applications in the U.S. are Facebook, Instagram, Pinterest, Twitter, and LinkedIn (Greenwood & Perrin, 2016), most college students might use more than one of these applications (Smith & Anderson, 2018) to stay online. The current study did not identify if the college students were using Instagram as an additional social tool or as an alternative to other online social activities.

Future studies should clarify if the participants had Instagram as a sole application or if it was an application in addition to others. In doing so, researchers may improve the validity of examining the relationship between Instagram use and adjustment measures. For instance, if participants had more than one social media applications (in addition to Instagram application) and scored higher on extraversion compared to participants who only have Facebook application, this may imply that Instagram application might be used as an additional social tool for making friends. In contrast, if participants only had Instagram application as the main social tool and scored higher on extraversion as compared to participants with many social media applications, it could be suggested that the participants with only Instagram may prefer to stay connected with others in person as compared to online.

This study, as with many other parallel studies on social media/ Facebook/ Internet addiction (e.g., Andreassen et al., 2012; Ayas, 2012; Kuss & Griffiths, 2011), is

of great importance to the community, in that it may contribute important information about online "addiction" (specifically on Instagram). Despite the limitations in this study, this research, nevertheless, demonstrated correlations between Instagram use and several adjustment measures (i.e., shyness, CGPA, negative affect, sleep quality, and neuroticism). Taking into account that more Instagram features soon will be installed in the application (e.g., Instagram shopping, sharing Instagram story to Facebook [Alexandra, 2018]) to attract new users and to retain current users, there is a need to continually explore and improve this area of research. By doing so, it will create a platform for contemporary researchers to work upon, and, at the same time, provide understanding and awareness of how Instagram, as with other online applications, may have a negative impact on the user.

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APPENDICES

APPENDIX A

Middle Tennessee State University Institutional Review Board Approval Letter

IRB
 INSTITUTIONAL REVIEW BOARD
 Office of Research Compliance,
 010A Sam Ingram Building,
 2269 Middle Tennessee Blvd
 Murfreesboro, TN 37129



IRBN001 - EXPEDITED PROTOCOL APPROVAL NOTICE

Thursday, February 01, 2018

Principal Investigator: **Kok Ping Chung (Student)**
 Faculty Advisor: **Mary Ellen Fromuth**
 Co-Investigators: **Jwa Kim and David Kelly**
 Investigator Email(s): **kkc3h@mtmail.mtsu.edu; maryellen.fromuth@mtsu.edu**
 Department: **Psychology**

Protocol Title: **Instagram use and college students' adjustments**
 Protocol ID: **18-2104**

Dear Investigator(s),

The above identified research proposal has been reviewed by the MTSU Institutional Review Board (IRB) through the EXPEDITED mechanism under 45 CFR 46.110 and 21 CFR 56.110 within the category (7) *Research on individual or group characteristics or behavior*. A summary of the IRB action and other particulars in regard to this protocol application are tabulated below:

IRB Action	APPROVED for one year from the date of this notification
Date of expiration	2/28/2019
Participant Size	200 (TWO HUNDRED)
Participant Pool	General Adults - Psychology SONA system
Exceptions	1. Online consent is permitted via a click of the mouse to confirm consent and participant age. 2. Compensation in the form of extra credit is allowed.
Restrictions	1. Mandatory informed consent. 2. The study and the informed consent are administered via: https://az1.qualtrics.com/jfe/preview/SV_bPgGYbKit3CU2Q5?Q_CHL=preview
Comments	NONE

This protocol can be continued for up to THREE years (2/28/2021) by obtaining a continuation approval prior to 2/28/2019. Refer to the following schedule to plan your annual project reports and be aware that you may not receive a separate reminder to complete your continuing reviews. Failure in obtaining an approval for continuation will automatically result in cancellation of this protocol. Moreover, the completion of this study MUST be notified to the Office of Compliance by filing a final report in order to close-out the protocol.

Institutional Review Board

Office of Compliance

Middle Tennessee State University

Continuing Review Schedule:

Reporting Period	Requisition Deadline	IRB Comments
First year report	1/31/2019	TO BE COMPLETED
Second year report	1/31/2020	TO BE COMPLETED
Final report	1/31/2021	TO BE COMPLETED

Post-approval Protocol Amendments:

Date	Amendment(s)	IRB Comments
NONE	NONE	NONE

The investigator(s) indicated in this notification should read and abide by all of the post-approval conditions imposed with this approval. [Refer to the post-approval guidelines posted in the MTSU IRB's website.](#) Any unanticipated harms to participants or adverse events must be reported to the Office of Compliance at (615) 494-8918 within 48 hours of the incident. Amendments to this protocol must be approved by the IRB. Inclusion of new researchers must also be approved by the Office of Compliance before they begin to work on the project.

All of the research-related records, which include signed consent forms, investigator information and other documents related to the study, must be retained by the PI or the faculty advisor (if the PI is a student) at the secure location mentioned in the protocol application. The data storage must be maintained for at least three (3) years after study completion. Subsequently, the researcher may destroy the data in a manner that maintains confidentiality and anonymity. IRB reserves the right to modify, change or cancel the terms of this letter without prior notice. Be advised that IRB also reserves the right to inspect or audit your records if needed.

Sincerely,

Institutional Review Board
Middle Tennessee State University

Quick Links:

[Click here](#) for a detailed list of the post-approval responsibilities.
More information on expedited procedures can be found [here](#).

APPENDIX B**Demographic Form**

Please answer the following questions.

1. What is your gender?

- Male
 - Female
 - Other/ Choose not to answer
-

2. What is your age?

- 18 - 20
 - 21 - 23
 - 24 - 26
-

3. What class are you in college?

- Freshman
 - Sophomore
 - Junior
 - Senior
-

4. What is your marital status?

- Single
 - Married
 - Other
-

5. What is your current living situation?

- Staying with parents
 - Campus/ Non-campus apartment or house
 - Other
-

6. Have you ever used an Instagram application?

- No
 - Yes, in the past (Not in the past week)
 - Yes, currently (In the past week)
-

7. When was the last time you used Instagram?

- Less than 1 week ago
 - 1 week but less than 1 month ago
 - 1 month but less than 3 months ago
 - 3 months but less than 6 months ago
 - 6 months but less than 9 months ago
 - 9 months but less than one year ago
 - One year but less than two years ago
 - Two years but less than three years ago
 - Three years ago or more
 - Never
-

8. If you have ever used Instagram, how frequently do/did you typically use it?

- Very seldom (Once a week)
 - Seldom (Couple of times a week)
 - Often (Once a day)
 - Very often (More than twice a day)
-

9. If you have ever used Instagram, how long do/did you typically use it each day?

- Less than 15 minutes
 - 15 to 30 minutes
 - 31 minutes to 1 hour
 - More than 1 hour but less than 2 hours
 - More than 2 hours but less than 3 hours
 - More than 3 hours
-

APPENDIX C**Academic Habits and Achievement**

Please answer the following questions regarding your academic habits as accurately as possible.

1. How many class sessions do you typically miss per week for all of your classes combined?

- 0 to 2
 - 3 to 5
 - 6 to 8
 - 9 or more
-

2. How many hours in total do you spend studying each week outside of class?

- 0 to 2
 - 3 to 5
 - 6 to 8
 - 9 or more
-

3. What is your current/estimated college GPA?

- 0 to 1.9
- 2.0 to 2.9
- 3.0 to 4.0

APPENDIX D

Informed Consent Form

**Middle Tennessee State University Institutional Review Board
Informed Consent Document for Research**

Principal Investigator: Kok Ping Chung

Study Title: Instagram Use and College Students' Adjustment

Institution: Middle Tennessee State University

The following information is provided to inform you about the research project and your participation in it. Please read this form carefully and feel free to ask any questions you may have about this study and the information given below. You will be given an opportunity to ask questions, and your questions will be answered. Also, you will be given a copy of this consent form.

Your participation in this research study is voluntary. You are also free to withdraw from this study at any time. In the event new information becomes available that may affect the risks or benefits associated with this research study or your willingness to participate in it, you will be notified so that you can make an informed decision whether or not to continue your participation in this study.

For additional information about giving consent or your rights as a participant in this study, please feel free to contact the MTSU Office of Compliance at (615) 494-8918.

1. Purpose of the study:

The purpose of this study is to examine the relationship between Instagram use and college students' adjustment.

2. Description of procedures to be followed and approximate duration of the study:

If you choose to participate in this study, you will complete an anonymous survey that will take approximately 20-30 minutes. The survey consists of a demographic form (e.g., gender, age, educational level, marital status, and current living situation) and questions about your Instagram use. You also will be asked about your adjustment. Specifically, you will be asked about your level of shyness, school adjustment, academic functioning, sleep quality, personality traits, and any personal difficulty resulting from Instagram use.

3. Expected costs: There are no expected costs to you.

4. Description of the discomforts, inconveniences, and/or risks that can be reasonably expected as a result of participation in this study:

Lower than minimal risk is expected for the participants.

5. Compensation in case of study-related injury:

MTSU will not provide compensation in the case of study-related injury.

6. Anticipated benefits from this study:

a) The potential benefit to science and humankind that may result from this study is that we may be able to learn about the relationship between Instagram use and college students' adjustment. b) There are no known direct benefits available for the participants at this time.

7. Alternative treatments available: N/A.**8. Compensation for participation:**

You may receive one research credit for your psychology class. If you complete the survey or advance to the final page, your credit will be awarded automatically. If you start the survey and choose to discontinue (i.e., withdraw), you will still receive credit if you follow the withdraw instructions. You may simply skip the rest of the questions and choose "withdraw" from the dropdown box at the bottom of each survey page to receive automatic credit. If you do not advance to the final page or if you do not choose the withdraw button from the dropdown box, you will not receive any research credit.

9. Circumstances under which the Principal Investigator may withdraw you from study participation:

You must be between the age of 18 and 26 years old, and have ever used Instagram. Students who do not fit this requirement should not participate and will be withdrawn from participating.

10. What happens if you choose to withdraw from study participation:

Your participation is voluntary, and you may choose to withdraw at any time without consequences. To withdraw, you may advance to the final page or simply choose "withdraw" from the dropdown box at the bottom of any page to automatically receive credit. If you withdraw without advancing to the final page or choosing the withdraw button from the dropdown box, you will not be able to receive any research credit. You also may refuse to answer questions that make you feel uncomfortable and still remain in the study. You may simply skip those questions.

11. Contact Information. If you should have any questions about this research study or possible injury, please feel free to contact Kok Ping Chung at kkc3h@mtmail.mtsu.edu or my Faculty Advisor, Mary Ellen Fromuth, Ph.D., at 615-898-2548, MaryEllen.Fromuth@mtsu.edu.

12. Confidentiality. All efforts, within reason, will be made to keep the personal information in your research record private but total privacy cannot be promised. Your information may be shared with MTSU or the government, such as the Middle Tennessee

State University Institutional Review Board, Federal Government Office for Human Research Protections, if you or someone else is in danger or if we are required to do so by law.

13. STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS STUDY

Are you 18 years old and above?

- Yes. Please answer the next question.
- No. If you are not at least 18 years old, you will not be able to participate in this survey and will not receive credit. Please click "No, I do not agree to participate" to the question below and you will be directed to the MTSU Sona system login page. Please note, even if you click "Yes, I agree to participate," you will be directed back to the MTSU Sona system login page as well.
- Yes, I agree to participate. By clicking this box, it indicates that you have read this informed consent document, understand each part of the document, and freely and voluntarily choose to participate in this study. After clicking this box, click on the red arrow button below to begin the survey.
- No, I do not agree to participate and/or I am not at least 18 years old. By clicking this box, it indicates that you do not wish/are not able to participate in this research study and will not receive any credit. After clicking this box, click on the red arrow button below to return to the MTSU Sona system login page.

APPENDIX E

Debriefing Form

Debriefing Information

Previous studies have examined the relationships among Internet addiction (Ayas, 2012), social media addiction (Kuss & Griffiths, 2011), Facebook addiction (Andreassen, Torsheim, Brunborg, & Pallesen, 2012) and adjustment. Due to the changes in social media platforms, however, individuals are engaging in the use of newer social media applications, such as Instagram. Furthermore, despite large user growth, Instagram has received little to no research attention.

In this study, therefore, Instagram, the 2nd most used (Greenwood & Perrin, 2016) and largest growing social media platform (Loechner, 2015) after Facebook in the United States, was examined. More specifically, the purpose of this study was to investigate the relationship between Instagram use and college students' adjustment (i.e., shyness level, adjustment to college, academic achievements, sleep quality, and personality traits).

If you would like to know more about this study or your rights as a participant, please feel free to contact me at kkc3h@mtmail.mtsu.edu or my faculty advisor, Dr. Mary Ellen Fromuth, at MaryEllen.Fromuth@mtsu.edu. The results from this study will not be immediately available, but arrangements can be made for you to obtain the results of the study once they become available. If you would like a copy of the study's results, you can email me at the above email, and it should be available in approximately six months' time.

Thank you for your time and patience in helping me with this project.

Kok Ping Chung
Graduate Student, Clinical Psychology
Kkc3h@mtmail.mtsu.edu

Mary Ellen Fromuth, Ph.D.
Supervisor
MaryEllen.Fromuth@mtsu.edu