Social Media Use and the Relationship between Mental, Social, and Physical Health in College Students

by

Juan M. Cuara

Master of Public Health, California Baptist University, 2020

Thesis Submitted in Partial Fulfillment

of the Requirements for the Degree of

Master of Public Health

California Baptist University

August 2020

© 2020

Juan M. Cuara

The College of Health Science

California Baptist University

Riverside, California

This is to certify that the Master's Thesis of

Juan Manuel Cuara

has met the thesis requirements

for the degree of

Master of Public Health

Approved by:

Ashley V. Parks

Ashley Parks, DrPH
Associate Professor
Committee Chair

Robert J LaChausse

Robert LaChausse, PhD
Professor
Committee Member

Mathew Lazari, MHA
Adjunct Faculty
Committee Member

Abstract

In today's technological age, social media has become increasingly popular throughout the world. Factors that have contributed to the rise of social media include its ease of accessibility, portable electronic devices with internet capabilities, and the internet. As social media becomes more popular, some adolescents and young adults have begun using it excessively throughout their day. The excessive use of social media has been found to have negative impacts on users' physical, mental, and social well-being. Much evidence suggested that some social media users have little to poor control over their social media use, which can interrupt their normal functioning in school, family, and work areas. The purpose of this study was to investigate the relationship of self-reported social media screen time and one's physical and mental well-being in college students (*n = 97)* using a survey. This study also investigated differences between groups. The dimensions of health addressed in this study were measured by body mass index (BMI) calculation and the Hospital Anxiety and Depression Survey. There were no significant relationships between social media screen-time and health; anxiety, depression, and BMI. There was a positive, weak non-significant association between college students social networking time and total anxiety score ($r(91) = .12$, $p = .22$). A positive, weak non-significant association between college students social networking time and total depression score ($r(91) = .14$, $p = .78$) was found. A positive weak non-significant relationship between college students self-reported social networking screen time and BMI ($r(91) = .12$, $p = .24$) was found. There were also no significant differences between males and females in respect to social media screen-time and health, anxiety, depression, and BMI.

Key Words: Social Media, BMI, Anxiety, Depression, Social Well-being

Acknowledgments

I want to give a big thank you to my family for helping me along my journey to achieve my master's degree. Without their help and sacrifices, I would not be in the position that I am today. I would like to thank Dr. LaChausse for not only his helpful input on data collection, research, and statistics but for pushing me harder than any professor has in the past, which lead me to become a better student, researcher, and individual. I would also like to thank Professor Lazari, for being a part of my Thesis Committee. At one point I thought that creating my committee wouldn't be possible from all the declines I received; your decision to accept played a huge role in allowing me to continue my research. Lastly, I would like to give a big thank you to Dr. Parks, without you and your contributions to my research, none of this would have been possible, and for that I am forever grateful. Thank you for being an amazing Professor and always giving good helpful advice. I know that you will do amazing things this academic year as the Director of Public Health at California Baptist University. Blessings.

Table of Contents

List of Tables

List of Figures

Introduction

Overview of the Literature

In today's technological age, social media has become increasingly popular throughout the world. Today there are an estimated 3.6 billion people who are using social media worldwide with a projected increase to about 4.41 billion profiles by the year 2025 (Clement, 2020). Social media giant, Facebook, has nearly 2.6 billion profiles that are active each month (i.e. have been logged into) (Clement, 2020). According to 2019 estimates for North America, this figure is estimated to be around 246 million active profiles (Clement, 2020). About two-thirds of the United States population 18 years old or older uses Facebook, or another social media platform such as Instagram or Snapchat, and about 75% of this population accesses these websites regularly (Smith & Anderson, 2018). Reid and Weigle (2014) found that access to social media websites are the highest they have ever been in history. It has been documented that about 90% of college students engage in social media daily (Morgan, Snelson, & Elsion-Bowers, 2010).

There are a variety of outcomes that may be associated with social media use. These outcomes could impact various aspects of one's health such as their physical, mental, and social well-being. Consequences can include risky behaviors such as substance use, sex, and violence (Reid & Weigle, 2014). It has been found that about two-thirds of profiles visited contain some form of risky behavior, alcohol use in particular (Egan & Moreno, 2011; Moreno et al., 2014). Research by Banyai et al. (2016) indicated that excessive social media use may produce hardships in work, academic performance, and interpersonal relationships among family, friends, and peers. Woods and Scott (2016) found that anxiety and depression among adolescents may be related to social media use. Although social media addiction has yet to be identified as a real addiction, addictions are essentially a means of controlling anxiety and depression (Kim et al.,

2006). Social media use may also encourage sedentary behaviors which in turn increases an individual's risk of cardiovascular disease, type 2 diabetes, and obesity (Alley et al., 2017)

Depression

Social media has been found to be associated with depression among adolescents. Kircaburun et al. (2018) found a positive weak correlation between social media use and depression among 1,143 Turkish adolescents and adults. Woods and Scott (2016) found that adolescents who spend too much time on social media during the day and night have higher levels of depression among 463 Scottish adolescents. Another study by Labrague (2014) found that Facebook use and depression were significantly correlated. Scherr and Brunet (2017) found that online users who are depressed spend more time on social media than users who do not have depression among 510 adolescent users. Malaeb et al. (2020) found a significant association between problematic social media use and depression among a sample of young Lebanese adults. However, Jelenchick, Eickhoff, and Moreno (2013) did not find any significant associations between social networking sites and clinical depression.

Anxiety

Social media use has also been found to be associated with anxiety in both adolescents and adults. Woods and Scott (2016) found that the more time that is spent on social media, the higher the anxiety score in adolescents. Rooij, Ferguson, Mheen, and Schoenmakers (2017) found that social media use in Dutch adolescent students were associated with social anxiety. Malaeb et al. (2020) found that problematic social media use was significantly associated with anxiety among a sample of young Lebanese adults. Vanucci, Flannery, and Ohannessian (2017) determined that daily social media use was associated to scoring higher in the anxiety severity clinical cutoff, which could possibly indicate an anxiety disorder in a national web-based sample

of young adults. Hoge, Bickham, and Cantor (2017) found that if an adolescent prefers online experiences over in-person experiences that the adolescent will experience a worsening of social anxiety.

Cyberbullying

Social media use has been found to include a variety of risky behaviors among adolescents. Cyberbullying is one of the most common behaviors that are exhibited on social networking sites today; it is also reported to occur the most during adolescence (Yan et al., 2016). Cyberbullying has been found to affect about 20% to 40% of young people (Tokunaga, 2010). Kircaburan et al. (2018) found a relationship between problematic social media use and cyberbullying among a sample of high school and university students. Duarte, Pittman, Thorsen, Cunningham, and Ranney (2018) found that nearly 25% of adolescents have experienced some form of cyberbullying as either the perpetrator or the victim among 1,063 adolescents. The study also gave insight by providing descriptive statistics among the adolescent population: cyberbullying occurred more in females (57.3%) than males (43.7%).

Body Mass Index

A correlation has been found between social media and unhealthy eating habits among adolescents. Kanyinga, Chaput, and Hamilton (2015) found that students who use social networking sites are more likely to eat unhealthy foods and partake in sedentary behaviors compared to students who do not regularly use social networking sites. A study in China by Yan et al. (2017) found that adolescents who use only social networking sites, instead of television and video gaming, have a correlation to higher body mass indexes (BMIs) among a 2,625 adolescent sample. Tsitska et al. (2016) found that adolescents' problematic internet use was associated with an overweight/obese BMI in several European countries. However, Alley et al.

(2017) found that social media use and BMI were not associated among a sample of 1,170 Australian adults.

Public Health Concern

Social networking cites and the excessive amount of time that is spent on social media is a public health concern that needs to only be addressed not only in the United States of America but throughout the world. There are also a variety of health risks that may be associated with social media screen time such as depression, anxiety, and becoming overweight/obese, These health risks could follow adolescents throughout their lives and are detrimental to the development of healthy children, teenagers, and young adults; this is why public health practice to limit screen time is needed.

Purpose of the Study

Evidence suggested that there were various relationships associated to health and adolescents and young adults' screen time. The purpose of this study was to determine whether social media use by college students was related to one's physical, mental, and social well-being. The study also considered differences in social media use and health between male and female college students.

Research Questions

This study evaluated associations in social media screen time and health in respect to depression, anxiety, and body mass index. In addition, this study also determined if there were any significant differences between groups. The research questions were:

1. What is the correlation between the self-reported time college students spent using social media and depression?

2. What is the correlation between the self-reported time college students spent using social media and anxiety?
3. What is the correlation between self-reported time college students spent using social media and body mass index?
4. Are there differences between men's and women's BMI?
5. Are there differences between men's and women's social networking screen time?
6. Are there differences between men's and women's anxiety score?
7. Are there differences between men's and women's depression score?

Research Hypotheses

The following were the hypotheses and null hypotheses of the study:

H_1: There is a relationship between the self-reported time college students spent using social media and depression scale scores.

H_0: There is not a relationship between the self-reported time college students spent using social media and depression scale scores.

H_2: There is a relationship between the self-reported time college students spent using social media and anxiety scale scores.

H_0: There is not a relationship between the self-reported time college students spent using social media and anxiety scale scores.

H_3: There is a relationship between self-reported time college students spent using social media and body mass index.

H_0: There is not a relationship between self-reported time college students spent using social media and body mass index.

H_4: There are differences between men's and women's BMI.

$H_{0:}$ There are not differences between men's and Women's BMI.

$H_{5:}$ There are differences between men's and women's social networking screen time.

$H_{0:}$ There are not differences between men's and women's social networking screen time.

$H_{6:}$ There are differences between men's and women's anxiety score.

$H_{0:}$ There are not differences between men's and women's anxiety score.

$H_{7:}$ There are differences between men's and women's depression score.

$H_{0:}$ There are not differences between men's and women's depression score.

Method

Design

Primary data were collected using an online survey questionnaire between the months of April 2020 to July 2020 to answer the research questions. The survey was designed by combining surveys that helped test or score the independent health variables. Surveys were chosen based on past research study findings and their ability to reliably assess each scale. Data were gathered using a cross-sectional design. The survey was disseminated to college students at a faith-based private university in Southern California after permission to share the survey was granted by professors willing to share the electronic web-based survey with their students. Professors who were teaching undergraduate classes were selected and asked if they would send out an anonymous link to their students to participate in the survey. The Institutional Review Board at California Baptist University reviewed and approved this study prior to data collection.

Sample Size, Power, and Precision

A minimum sample size of 91 students was calculated using G*Power (Faul et al., 2009), statistical power of .80, alpha of .05, and estimated effect size of $r = .25$ was calculated from the average effect size of four studies. Participants were briefed about the nature of the study, time

commitment, and the confidentiality of their responses via the introduction of the online survey. Participants were provided an incentive to participate and were entered into a drawing from which five winners received a $20 iTunes Gift card.

Independent Variables and Dependent Variables

In order to evaluate the first three research questions, a Pearson's correlation coefficient statistical test was utilized. The independent variable to test hypotheses 1 was the time spent using social media, and the dependent variable was depression. The independent variable to test hypotheses 2 was social media use, and the dependent variable was anxiety score. The independent variable to test hypotheses 3 was social media use, and the dependent variable was BMI.

In order to analyze the remaining four research questions, an independent samples *t*-test was used. The independent variable to test hypotheses 4 was gender, and the dependent variable was BMI. The independent variable to test hypotheses 5 was gender, and the dependent variable was social networking screen time. The independent variable to test hypotheses 6 was gender, and the dependent variable was anxiety survey score. The independent variable to test hypotheses 7 was gender, and the dependent variable was depression survey score. Social media use was operationally defined for this study as using social networking sites for any duration of time in minutes.

Measures

Social Media Usage Questionnaire

According to Xanidis and Brignell (2016) social media usage can be measured with the Social Media Usage Questionnaire (internal consistency of .83). This instrument assesses problematic and excessive use of social media. It is comprised of nine items that utilize a 5-point

Likert scale from “never” to “always.” A high score indicates that the user excessively uses social media (Xanidis & Brignell, 2016).

Hospital Anxiety and Depression Scale

According to Zigmond and Snaith (1983), the Hospital Anxiety and Depression Scale is comprised of two subscales that consist of seven questions each (internal consistency of .88). It is scored from 0 to 3 and gives an overall score of 0 to 21 for anxiety and depression levels (Zigmond & Snaith, 1983). Any number that is equivalent to 8 or above is considered depressed or anxious (Zigmond & Snaith, 1983).

BMI

Body mass index was calculated manually from students’ recorded height and weight. Students’ height and weight was entered into the BMI portion of the Center of Disease Control and Prevention (CDC, 2020) website where they have a BMI calculator for public use.

Actual Screen Time/Social Media Screen Time

Depending on the brand of mobile device, this value can be accessed through settings in the phone. For example, the social media value in Apple iPhone is found in Settings > Battery > Battery Usage. For Android, these settings are found by dialing (*#*#4636#*#*), but some calculation of time may be required for android users. These instructions were included in the Survey with instructions to help reduce time utilized.

Results

Participants

Primary data collected from the months of April 2020 through July 2020 were analyzed to evaluate the seven research questions in this study. Descriptive statistics were used to help illustrate the demographics of participants in the dataset. A sample size of 97 college student

participants was used, which included 80 (82.5%) females and 17 (17.5%) males. Participants were asked if they considered themselves to be Latino in the form of a "yes" 38 (39.6%) or "no" 58 (60.4%) question, and one response received was missing data. Race was also asked in the form of a self-reported multiple-choice question. Among the 97 participants, 2 (2.2%) self-reported as American Indian or Alaskan Native, 4 (4.4%) as Native Hawaiian or Pacific Islander, 8 (8.8%) as Black or African American, 11 (12.1%) as Asian, and 66 (72.5%) identified themselves as White. Six surveys were missing race data. See Table 1 for demographics.

Major Findings

A Pearson correlation coefficient statistical test was calculated to test the hypothesis that there was a positive relationship between self-reported time college students spent on social media and their feelings of depression. There was a positive, weak non-significant association between college students social networking time and total depression score ($r(91) = .14$, $p = .78$). Social networking screen time was not related to depression (see Table 2).

A Pearson correlation coefficient statistical test was calculated to test the hypothesis that there was a positive relationship between self-reported time college students spent on social media and their feelings of anxiety. The analysis concluded that there was a positive weak non-significant association between college students social networking time and total anxiety score ($r(91) = .12$, $p = .22$). College student's social networking time was not associated with anxiety (see Table 2).

A Pearson correlation coefficient statistical test was calculated to test the hypothesis that there was a positive relationship between self-reported time college students spent on social media and their BMI. The analysis determined that there was a positive weak non-significant

relationship between college students self-reported social networking screen time and BMI. ($r(91) = .12$, $p = .24$). College student's social networking time was not associated with BMI.

An independent-samples *t*-test was calculated to compare the male and female respondents' BMIs. The results indicated that there were no significant differences between males' and females' BMIs ($t(95) = .37$, $p = .71$, $d = .09$). The mean for men was 27.02 (SD = 4.29) and the mean for females was 26.46 (SD = 5.98). There is no difference in BMI between males and females.

An independent-samples *t*-test was calculated comparing men's and women's self-reported time spent on social media. This analysis determined that there were no significant differences between males and females' social networking screen time ($t(89) = -1.8$, $p = .07$, d = -.50. The mean for men was 253.1 (SD = 295.88), and the mean for women was 436.4 (SD = 377.71). Social networking screen time for men and women are not different.

An independent-samples *t*-test was calculated to compare men's and women's feelings of anxiety. The results concluded that there were no significant differences between men's and women's anxiety scores ($t(95) = -1.28$, $p = .20$, $d = -.34$). The mean for men was 5 (SD = 2.62), and the mean for women was 6.15 (SD = 3.49). Men's and women's anxiety scores are the same.

An independent-samples *t*-test was calculated on research question 7, which compared men's and women's feelings of depression. The results concluded that there were no significant differences between men's and women's depression scores ($t(95) = -1.28$, $p = .39$, $d = .23$). The mean for men was 5 (SD = 2.62), and the mean for women was 6.15 (SD = 3.49). Men's and women's depression scores are the same.

Discussion

Summary of Major Findings

The results of data analysis for the seven hypotheses for this research study were not consistent with other previous research studies (Kircaburun et al., 2018, Malaeb et. al., 2020, Yan et al., 2017). One possible reason for this is that this study was conducted in the United States of America, while other studies that produced significant results were in different countries, such as China, Turkey, Scotland, and Lebanon. These areas of significance are areas where demographics not only differ from one another but are vastly different when compared to the United States. There is also a possibility that each of these respective areas and their inhabitants' social determinants of health affect their mental status when compared to populations in the United States. Another important aspect of these findings was that this study did not use random sampling and had a smaller sample size compared to the previous studies.

Public Health Implications

Although the results of the analysis were determined to be non-significant, there have been significant results in larger studies and in other countries of the world, which means that further research on adolescents' screen time, BMI, anxiety, and depression should be conducted. According to Dr. Pies (2009), there is also an ongoing debate whether internet addiction should be included in the new version of the Diagnostic and Statistical Manual of Mental Disorders (DSM). There is already an inclusion of an "Internet Gaming Disorder" that was recognized in the "Conditions for Further Research" in the DSM fifth edition (DSM-V) (Rehbain et al., 2015).

Moreover, as previously noted, social media has become increasingly popular throughout the world due to its ease of accessibility with portable electronic devices and the internet. As social media becomes more popular, some adolescents and young adults have begun using social

media excessively throughout their days. The excessive use of social media has been found to have negative impacts on users' physical, mental, and social wellbeing. Problematic social media use hasn't been identified as a real issue, and boundaries for this have yet to be defined.

Next Steps

While this research evaluated relationships among social media screen time, health, demographics, and behavioral differences between groups and health, future researchers should also examine the relationship between significant results and determine the prediction measures of these results. As social media is predicted to grow in the coming years, future researchers should reinvestigate the relationships between screen time and health variables due to the possibility of a false negative as well as the multitude of factors involved. In light of significant results in other studies, social media addiction should be included in updates to the Diagnostic and Statistical Manual of Mental Disorders (DSM) so that public health and clinical professionals can further research and treat individuals struggling with social media addiction and the potentially negative impacts. Future studies should also examine differences between grade levels, race, age, income levels and health. Future researchers should also decide on using more effective survey(s) if possible to help ensure that the most reliable health survey is utilized. In this study and past studies, college students and/or adolescents were examined; future researchers should follow this trend as well as research the subject matter across a broader population to investigate the differences between race and age.

Limitations

The survey utilized for this research study was distributed during the coronavirus (COVID-19) pandemic, and this could have caused a "history" threat to internal validity due to the fact that many students were practicing social distancing and may have spent more time than

usual on their phones and/or social media. Secondly a “selection” threat to internal validity may have occurred because the chosen groups were not selected at random. There may also have been self-reporting bias in the participants’ surveys because surveys were administered electronically, which may have influenced them to answer in a more acceptable manner rather than being fully honest on the survey.

Two of the instruments that were originally chosen were not used to analyze the data that were collected. The Social Media Use Questionnaire (SMUQ) was initially intended to be used to score the amount of time utilized on social media or one’s addiction to social media. However, after contacting the authors and learning the survey did not have a scoring scale that could be calculated, it was deemed to not be as useful as originally planned even though it was a reliable instrument (internal consistency of .83)(Xanidis & Brignell, 2016). A question was also mistakenly excluded in the SMUQ, which could possibly influence the data in a negative manner. The General Belongingness Scale was the second instrument that did not have a scoring scale to score the survey; however, the questions that were used can be useful in future analysis of feelings of general belonging. Lastly, age was not included in any analysis because one age was not included in the original survey question, age 20. This study utilized a faith-based university sample, which may not be a good representation of the social media related behaviors and related health impacts of American college students as a whole.

Lastly, this study and its results were found to be insignificant, this may have possibly been due to a type II error. While visible differences were observed between groups with medium effect sizes, the analyses performed failed to detect statistically significant differences nor relationships in any of the completed tests. This could possibly be due to the occurrence of

an false negative(s) due to the lack of specificity and statistical power due to insufficient sample size.

References

Alley, S., Wellens, P., Schoeppe, S., de Vries, H., Rebar, A. L., Short, C. E., & Vandelanotte, C. (2017). Impact of increasing social media use on sitting time and body mass index. *Health Promotion Journal of Australia, 28*(2), 91-95.

Banyai F., Zsila, A., Kiraly O., Maraz A., Elekes Z., Griffiths MD, et al. (2017) Problematic social media use: Results from a large-scale nationally representative adolescent sample. *PLoS ONE, 12*(1), e0169839.doi:10.1371/journal. pone.0169839

I.H. Chen, C. Strong, Y.C. Lin, M.C. Tsai, H. Leung, C.Y. Lin, M.D. Griffiths Time invariance of three ultra-brief internet-related instruments: Smartphone Application-Based Addiction Scale (SABAS), Bergen Social Media Addiction Scale (BSMAS), and the nine-item Internet Gaming Disorder Scale-Short Form (IGDS-SF9)(Study Part B) Addictive Behaviors (2019)

Delaney, D., Stein, L.A.R., & Gruber, R. (2018). Facebook addiction and impulsive decision-making. *Addiction Research & Theory, 26*(6), pp. 478-486. Doi:10.1080/16066359.2017.1406482

Duarte, C., Thorsen, M., Ranney, M., Pittman, S., & Cunningham, R. (2018). Correlation of minority status, cyberbullying, and mental health: A cross-sectional study of 1031 adolescents. *Journal of Child and Adolescent Trauma, 11*(1), 39-48. doi:10.1007/s40653-018-0201-4

Facebook. (April 29, 2020). Number of monthly active Facebook users worldwide as of 1st quarter 2020 (in millions) [Graph]. In *Statista*. https://www-statista-com.libproxy.calbaptist.edu/statistics/264810/number-of-monthly-active-facebook-users-worldwide/

Faul, F., Erdfelder, E., Buchner, A., & Lang, A.-G. (2009). Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*, 1149-1160.

Hoge, E., Bickham, D., & Cantor, J. (2017) Digital media, anxiety, and depression in children. *American Academy of Pediatrics, 140*(Supplement 2), S76-S80. DOI: 10.1542/peds.2016-1758G

Jelenchick, L. A., Eickhoff J. C., Moreno M. A. (2013). "Facebook depression?" Social networking site use and depression in older adolescents. *Journal of Adolescent Health, 52*, 128–130. doi: 10.1016/j.jadohealth.2012.05.008

Kim, K., Ryu, E., Chon, M. Y., Yeun, E. J., Choi, S. Y., Seo, J. S., & Nam, B. W. (2006). İnternet addiction in Korean adolescents and its relation to depression and suicidal ideation: A questionnaire survey. *International Journal of Nursing Studies, 43*, 185–192.

Király, O., Sleczka, P., Pontes, H. M., Urbán, R., Griffiths, M. D., & Demetrovics, Z. (2017). Validation of the ten-item internet gaming disorder test (IGDT-10) and evaluation of the nine DSM-5 internet gaming disorder criteria. *Addictive Behaviors, 64*, 253-260.

Kırcaburun, K., Çolak, T., Kokkinos, C., Demetrovics, Z., Király, O., & Griffiths, M. (2018). Problematic online behaviors among adolescents and emerging adults: Psychosocial factors. *International Journal of Mental Health and Addiction*, 1-18. doi:10.1007/s11469-018-9894-8

Malaeb, D, Salameh, P, Barbar, S, et al. Problematic social media use and mental health (depression, anxiety, and insomnia) among Lebanese adults: Any mediating effect of stress? *Perspect Psychiatric Care*, *2020*, 1–11.

Meshi, D., Elizarova, A., Bender, A., & Verdejo-Garcia, A. (2019). Excessive social media users demonstrate impaired decision making in the Iowa Gambling Task. *Journal of Behavioral Addictions, 8*(1), 169-173. Doi: 10.1556/2006.7.2018.138

Moreno, M. A., Parks, M. R., Zimmerman, F. J., Brito, T. E., & Christakis, D. A. (2009). Display of health risk behaviors on Myspace by adolescents. Prevalence and associations. *Archives of Pediatric Adolescent Medicine, 163*, 27-34

Pies R. (2009). Should DSM-V designate "Internet addiction" a mental disorder? *Psychiatry, 6*(2), 31–37.

Pontes, H. M., Király, O., Demetrovics, Z., & Griffiths, M. D. (2014). The conceptualisation and measurement of DSM-5 internet gaming disorder: The development of the IGD-20 test *PLoS ONE*, *9*(10), e110137. Doi: 10.1371/journal.pone.0110137

Rehbein, F., Kliem, S., Baier, D., Mößle, T., & Petry, N. M. (2015). Prevalence of internet gaming disorder in German adolescents: Diagnostic contribution of the nine DSM-5 criteria in a state-wide representative sample. *Addiction, 110*(5), 842–851.

Reid, D. & Weigle, P. (2014). Social media use among adolescents: Benefits and risks. *Adolescent Psychiatry, 4*. Doi: 10.2174/2210676604021407091158 10.

Rooij, V. A., Ferguson C., Mheen, D., & Schoenmakers, T. (2017). Time to abandon Internet Addiction? Predicting problematic internet, game, and social media use from psychosocial well-being and application use. *Clinical Neuropsychiatry, 14*, 113–121.

Sampasa-Kanyinga, H., Chaput, J., & Hamilton, H. A. (2015). Associations between the use of social networking sites and unhealthy eating behaviours and excess body weight in adolescents. *The British Journal of Nutrition, 114*(11), 1941-1947. doi:10.1017/S0007114515003566

Statista. (July 15, 2020). Number of social network users worldwide from 2017 to 2025 (in billions). In *Statista*. https://www-statista-com.libproxy.calbaptist.edu/statistics/278414/number-of-worldwide-social-network-users/

Turel, O., Cavagnaro, D. R., & Meshi, D. (2018). Short abstinence from online social networking sites reduces perceived stress, especially in excessive users. *Psychiatry Research, 270*, 947-953. Doi: 10.1016/j.psychres.2018.11.017

UCLA Center for Health Policy Research. (2019, September 11). *California Health Interview Survey*. https://healthpolicy.ucla.edu/chis/design/Documents/2018 Questionnaires and TopicsList/09-11-19 Updated/CHIS 2018 Adult.pdf.

Woods, H., & Scott, H. (2016). #Sleepyteens: Social media use in adolescence is associated with poor sleep quality, anxiety, depression and low self-esteem, *Journal of Adolescence, 51*, 4149.https://doi.org/10.1016/j.adolescence.2016.05.008.(http://www.sciencedirect.com/science/article/pii/S0140197116300343)

Yan, H., Wang, Y., Wu, Y., Zhang, X., Wang, Q., Ma, L., & Moore, J. (2017). Associations among screen time and unhealthy behaviors, academic performance, and well-being in Chinese adolescents. *International Journal of Environmental Research and Public Health, 14*(6). doi:10.3390/ijerph14060596

Young, E.L., Boye, A.E., & Nelson, D.A. (2006). Relational aggression: Understanding, Identifying, and responding in schools. *Psychology in the Schools, 43*(3), 297-312. doi:10.1002/pits.20148

Appendix

Table 1

Gender, Age, Ethnicity, Grade, and Mean/Standard Deviation for Screen time BMI, Anxiety & Depression

		N	Percent
Gender	Male	17	17.5
	Female	80	82.5
Age	18	4	4.1
	19	20	20.6
	20	0	0
	21	27	27.8
	22	8	8.2
	23	6	6.2
	24	2	2.1
	25 & up	30	30.9
Race & Ethnicity	American Indian or Alaskan Native	2	2.1
	Asian	11	11.3
	Black or African American	8	8.2
	Native Hawaiian or Pacific Islander	4	4.1
	White	66	68
Grade	Freshman	13	13.4
	Sophomore	12	12.4
	Junior	28	28.9
	Senior	26	26.8
	Ungraded or other grade	17	17.5
Screen time			Standard Deviation
	Males	16	295.87
	Females	75	377.70
BMI	Males	17	4.28
	Females	80	5.98
Anxiety	Males	17	2.62
	Females	80	3.49
Depression	Males	17	3.27
	Females	80	2.86

Table 2

Correlation Matrix of Variables: Screen time, Anxiety, and Depression

		How long is your total screen time this week?	Anxiety Total Scale Score	Depression Total Scale Score
How long is your total screen time this week?	Pearson Correlation	1	.068	.117
	Sig. (2-tailed)		.521	.271
	N	90	90	90
Anxiety Total Scale Score	Pearson Correlation	.068	1	.419**
	Sig. (2-tailed)	.521		.000
	N	90	97	97
Depression Total Scale Score	Pearson Correlation	.117	.419**	1
	Sig. (2-tailed)	271	.000	
	N	90	97	97

**. Correlation is significant at the 0.01 level (2-tailed).

Figure 1

Mean Differences in Social Networking Screen Time Across Gender Categories

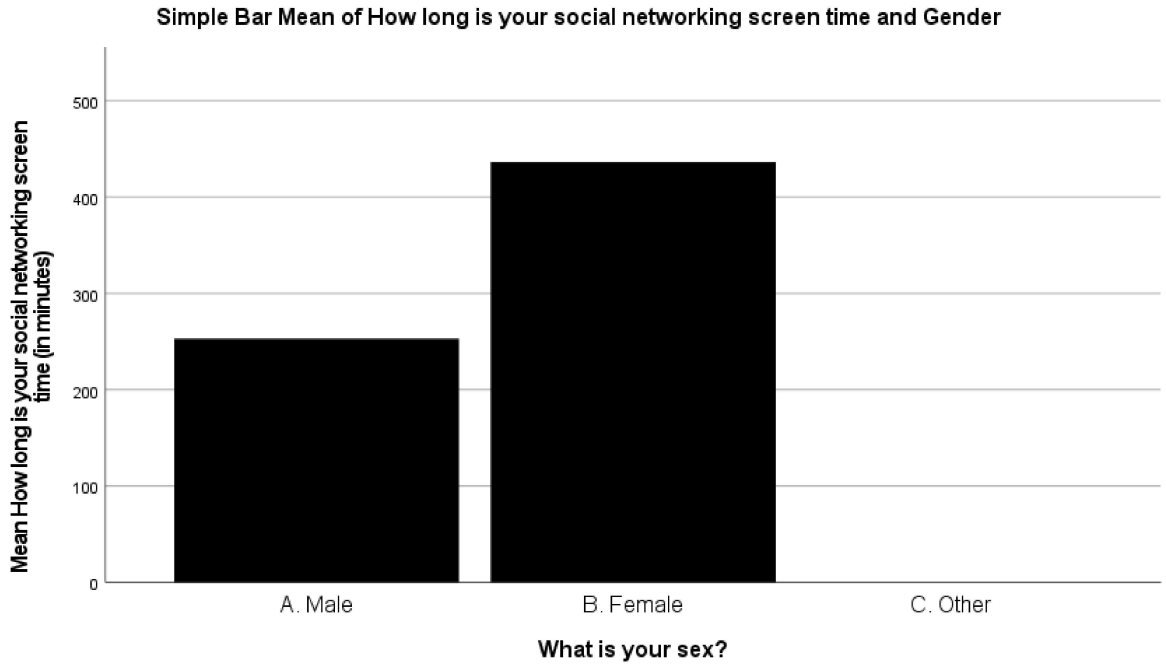

Figure 2

Mean Differences in Calculated BMI Across Gender Categories

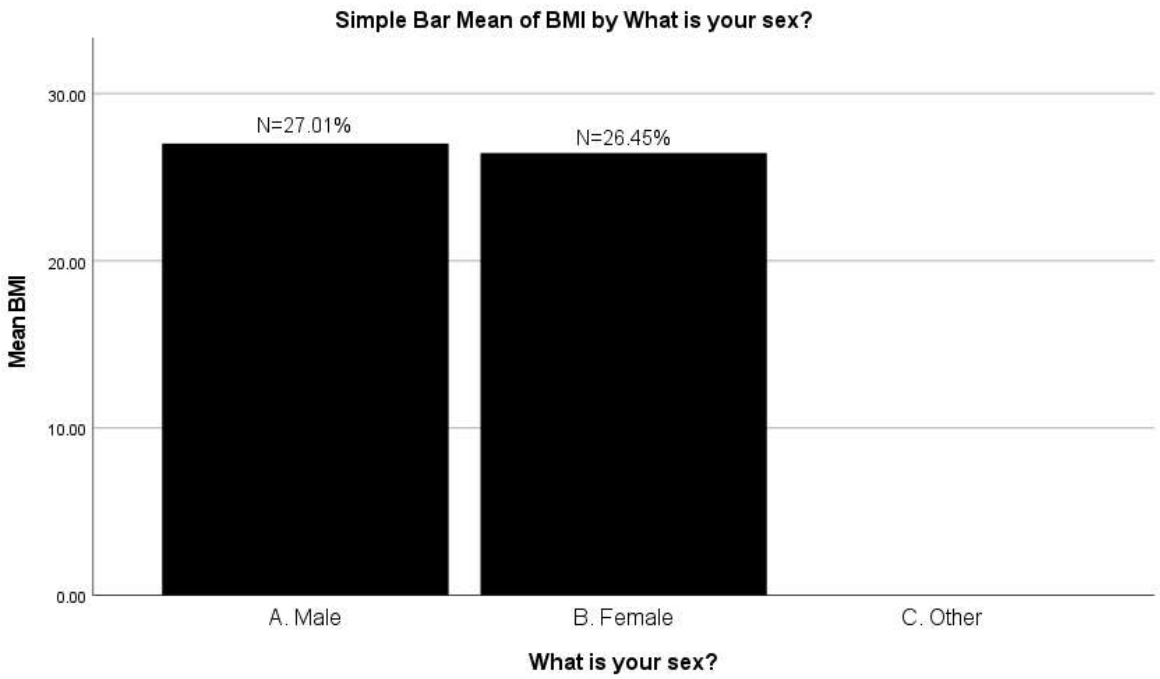

Figure 3

Mean Differences in Anxiety Scale Scores Across Gender Categories

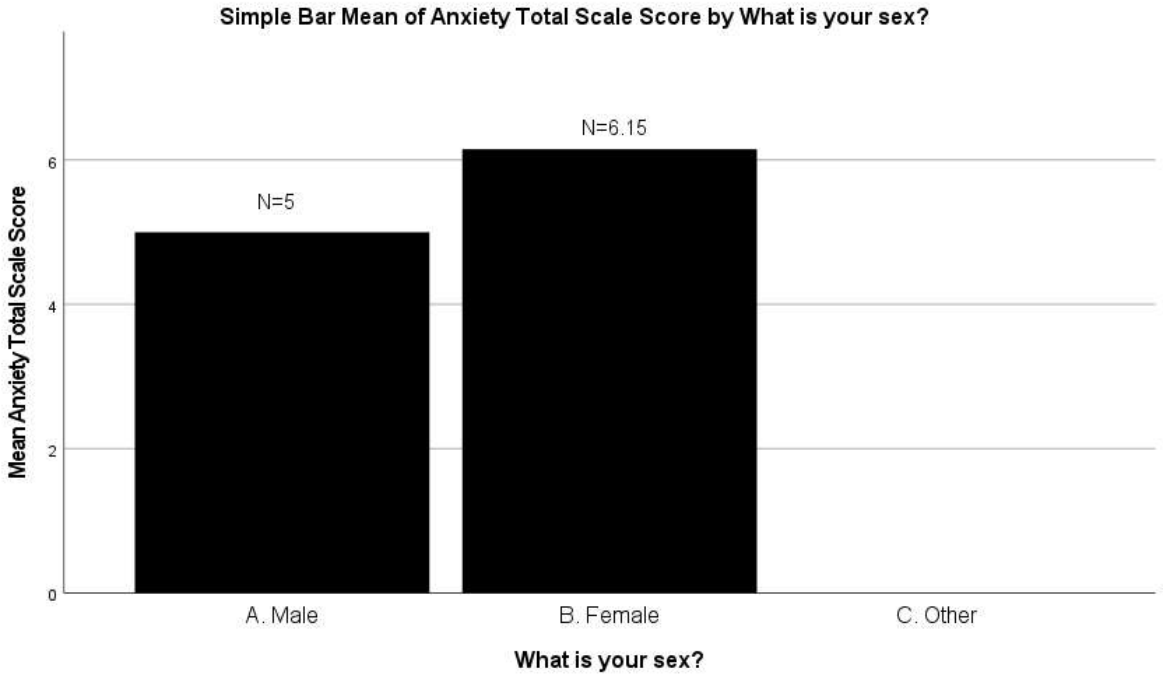

Figure 4

Mean Differences in Depression Scale Scores Across Gender Categories

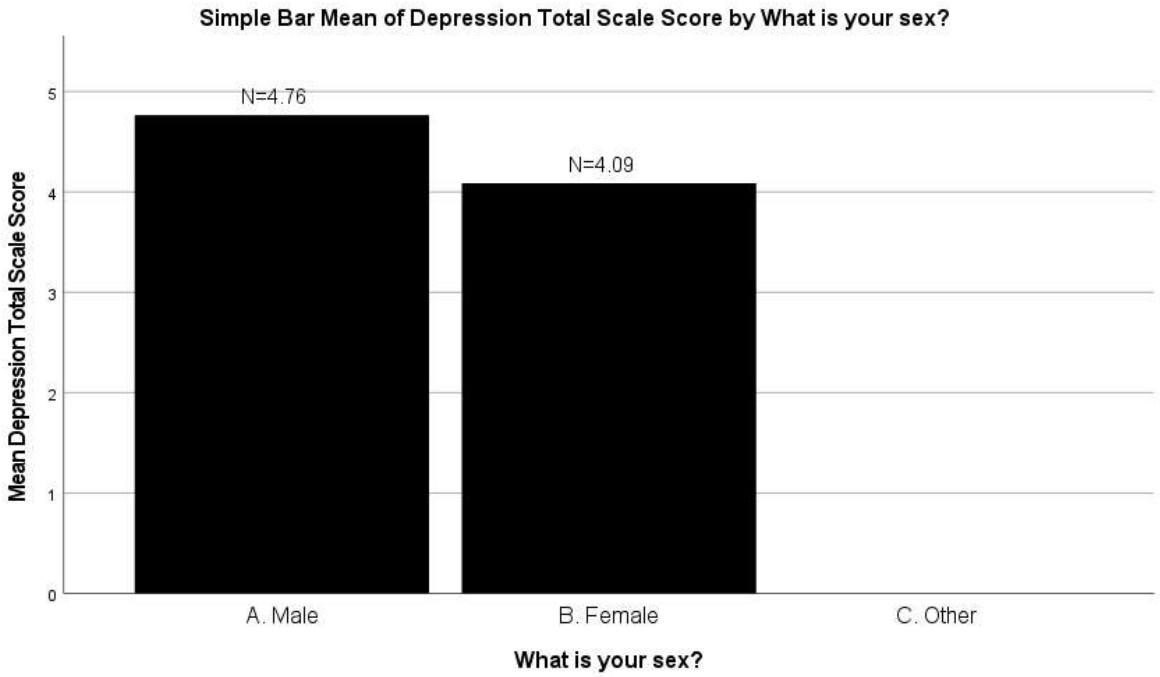

Figure 5

Scatter Plot of Screen Time and BMI of Survey Participants

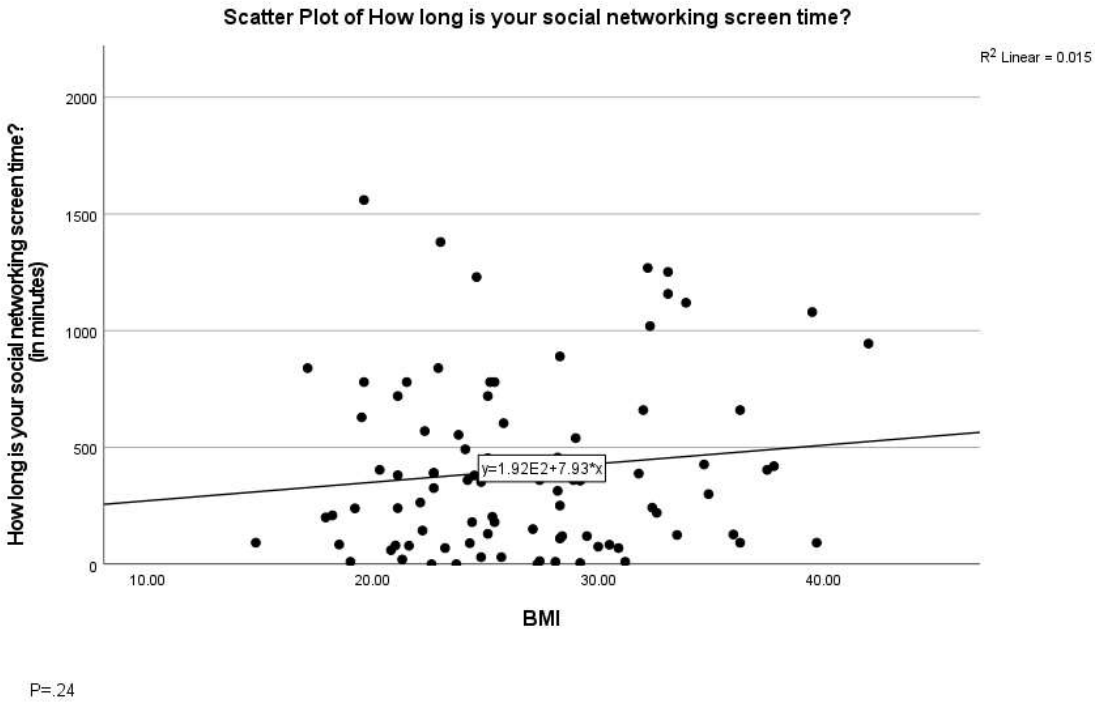

Figure 6

Scatter Plot of Screen Time and Anxiety Total Scale Score

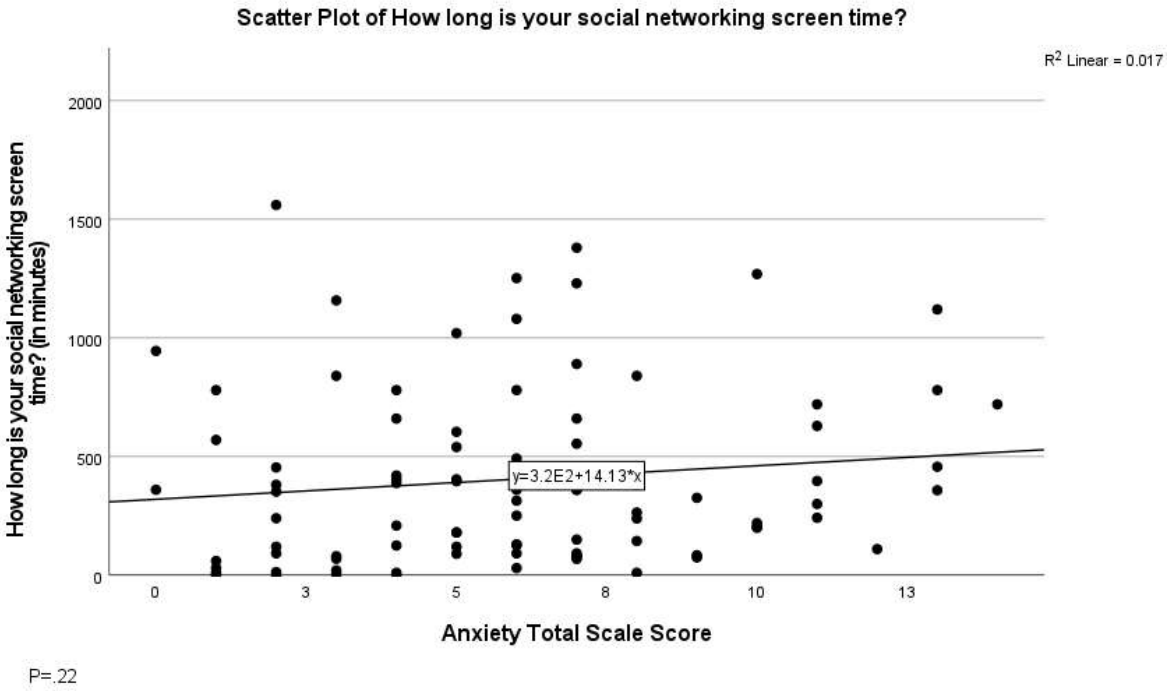

Figure 7

Scatter Plot of Screen Time and Depression Total Scale Score