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Factors Affecting Mental Health of College-Aged Individuals

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Factors Affecting Mental Health of College-Aged Individuals

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Factors Affecting Mental Health of College-Aged Individuals

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ABSTRACT

Factors Affecting Mental Health of College-Aged Individuals

College can be a trying time for many students, from the stresses of a new academic load to dealing with financial insecurities. This could be a time where mental health issues, like anxiety and depression, are first starting to emerge, and many look to find ways to cope that may not be beneficial. Previous research has looked at many factors individually as to what the underlying factors could be, but none examine the main factors, sleep, physical activity, social media, and digital technology, simultaneously and little is known about how these factors affect anxiety and depression, as well as the relationship they have with one another. This study examined the relationship between these factors on anxiety and depression, as well as one another. A high percentage of our study population (nearly 70%) exhibited symptoms indicative of depression. Regression analyses revealed that sleep was the strongest predictor of both depression and anxiety scores among college students, and social media addiction was a predictor of depression scores as well. In an effort to improve mental health amongst this population, interventions are needed to lessen social media and digital technology use, while improving sleep.

Keywords: anxiety, depression, sleep, physical activity, social media, digital technology

Dedication

I dedicate this thesis to my mom, Angella, and my siblings Amaari and Wilbert. Also, to all of my family and close friends.

Acknowledgments

I am profoundly grateful for the unwavering support of my committee throughout this entire journey: Dr. Tinius, my committee chair, Dr. Tolusso, and Dr. Schafer. The learning experiences provided, not just during this thesis, but throughout my time at Western Kentucky University, have been invaluable to me and will stick with me beyond my time here.

This project owes its success to the incredible support of my family. To my mom, Angella, thank you for being there during those late-night moments when I needed to vent. Amaari, my younger brother, your support meant everything to me in a new city. Aunt Dorn, your encouraging words always guided me in the right direction. To my entire family and close friends, your unwavering support has been my pillar of strength and determination when I could not see the end of the tunnel.

I also extend my gratitude to God for His guidance and strength throughout this challenging semester. His faithfulness has helped me overcome countless obstacles and navigate long days and nights.

To all those who have been part of this journey over the past two and a half years, I extend my heartfelt thanks. Your support and encouragement have made all of this possible, and I am deeply appreciative and grateful for you all.

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Introduction

College students are facing an era of considerable challenges that pose a threat to their overall health and wellness. Signs of mental health disorders are present in about half of the American population, with the first emergence often occurring during early young adulthood, per the Diagnostic and Statistical Manual of Mental Disorders criteria (DSM-IV) (Kessler et al., 2005). Those who are most affected seem to be the age group labeled “Generation Z”, who are classified as those born in the years ranging from the mid-1990s to the early 2000s (Gunnell, 2018). Coinciding with the introduction of new technology, such as social media and smartphones, the country has faced an onslaught of challenging circumstances, such as a global pandemic beginning in 2020 which may contribute to mental health woes for young adults who were teens during this time.

As the overuse of technology started to become prevalent, it has led to the creation of the phrase “death by digital distraction”, which is noted as an extreme consequence of personal technology use and a result of it being sleep deprivation and a slew of mental disorders, such as depression (Langley & Hutt, 2022). Adequate sleep is central to a college student’s mental health and well-being. (Al-Khani et al., 2019) and if 78% of college-aged individuals are spending most of their free time on social media, they are prone to losing sleep, with their mental health being the most affected (Smith and Anderson, 2018). With mental health conditions like social anxiety and depression, studies point towards social media and digital addiction being the cause (Kong et al. 2020). Depression was found to be affected after a year following a longitudinal study of adolescents (Bickham et al.,2015). Although spending time daily on the Internet and social media may not seem to do any harm in the individuals’ mind, it can have considerable

consequences, as it can affect the neurochemical processes that occur in the brain, inadvertently causing mental health conditions (Langley & Hutt, 2022).

It is known that advancements in technology increase the duration that students spend on screen time and have an independent negative association with physical activity (Wu et al., 2015). Irrefutable evidence demonstrates that regular physical activity has advantageous effects on the health of all individuals (Anderson & Shivakumar, 2013). The World Health Organization (WHO) recommends that all individuals ranging in age from 18 to 64 years old perform approximately 150 minutes of intermediate-intensity physical activity or 75 minutes of dynamic-intensity physical activity per week (World Health Organization (WHO), 2010). The time that could theoretically be used for physical activity is being replaced with sedentary activities, like studying and using the computer for homework, streaming services, social media, and other types of screen time. However, even with overwhelming evidence from studies emphasizing the importance of physical activity, physical inactivity is still regarded as one of the greatest problems of the 21st century, with there being little to no improvement since the issue first arose (Trost et al., 2014 as cited in Wu et al., 2015).

Taken together, college students are at risk for developing mental health conditions (depression and anxiety) based on a multitude of interactive factors, including overuse of social media and digital technology, physical inactivity, and lack of quality sleep, all of which compete with the demands of schoolwork. Therefore, research in this area, specifically in the current generation of college students, is warranted. The aim of this study is to investigate the interactive relationships between physical activity, sleep, and digital/social media addiction, on depression and anxiety among college students.

Research Question

How do digital/social media addiction, sleep, and physical activity interact and relate to depression and anxiety among college students?

Hypothesis

Physical inactivity, inadequate sleep, and high levels of digital addiction and social media usage will all be positively correlated to depression and anxiety levels among college students.

In addition, physical activity, sleep, and digital/social media addiction will be related to each other, suggesting all of these factors need to be carefully considered when drawing conclusions about the causes of depression and anxiety among college-aged students.

Review of Literature

Sleep Quality and Mental Health

Adequate sleep is central to college student's mental health and well-being. (Al-Khani et al., 2019). Watson et al. (2015) found that the most adequate amount of sleep for younger adults, ranging in age from 18 - 45 years old, was at least nine hours or more (Watson et al., 2015). Despite there being some studies that suggested possible justification as to why longer sleep times may be harmful, there was not a consensus on how sleeping for long time periods could definitively cause poor health issues. There is an overwhelming amount of research in agreement that sleep quality plays an important role in brain function and behavior (Tarokh et al., 2016). Despite the immense approval for the quality of sleep being beneficial for the mental health of adolescents and college-aged individuals, insufficient quality of sleep is still a growing health problem (Garrett et al. 2018). In a study using the Pittsburgh Sleep Quality Index (PSQI), over

60% of students were categorized as being poor-quality sleepers, reporting significant problems of psychological health compared to good-quality sleepers (Lund et al., 2010). Several studies have focused on how sleep-related problems, such as insomnia, have impacted college students' mental health, with disorders like depression and anxiety (Dinis & Braganca, 2018; Nyer et al. 2013). Depression is known as the most common type of depressive disorder, with it regularly being associated with the most prevalent sleep affliction, insomnia, as they are very closely related (Jiang et al., 2022). With the commonality of sleep disorders, like insomnia, becoming a huge health concern, it has been found that there are strong relationships with several psychiatric disorders, such as anxiety and depression. Despite this, there is not adequate research on the clinical impact of the amalgamation of these two conditions on the severity of insomnia and sleep quality (Oh et al., 2019). Throughout the literature, there is consistent evidence that mental health disorders do not become prevalent from occasional occurrences of poor sleep, it is exacerbated by continuous instances of inadequate sleep over long periods (Center for Disease Control (CDC), 2013). Tarokh et al. (2016) found that schools are continuously changing their starting times to earlier, affecting the amount of sleep that adolescents were able to receive and thus impacting their mental health (Tarokh et al. 2016). Teens in high school are losing approximately 90 minutes of sleep every school night, with sleeping time ranging from 6.9 hours to 8.4 hours. In an era where mental health and sleep in students have become more widespread than ever, findings of older studies may not be relevant to current generations. Disturbances in sleep have had implications for psychopathology, yet it's direct involvement in disorders of anxiety is vague (Cox & Olatunji, 2020). In light of this, researchers have become interested in the impact of sleep on the mental health of college students.

Physical Activity and Mental Health

Regular physical activity is widely known to have favorable effects on the health of all individuals and is backed with irrefutable evidence (Anderson & Shivakumar, 2013). The World Health Organization (WHO) recommends that all individuals ranging in age from 18 to 64 years old perform approximately 150 minutes of intermediate-intensity physical activity or 75 minutes of dynamic-intensity physical activity per week (World Health Organization (WHO), 2010). Typically, exercise is usually the first step taken when looking to make lifestyle changes to improve upon, manage, and/or prevent chronic diseases and illnesses, with regular physical activity being reported to have significant reductions in mortality by up to 30% in men and women (Anderson & Shivakumar, 2013). College students tend to have time-consuming schedules and lack the self-discipline needed to be consistently physically active, thus, intervention programs are required in order to improve inactivity (Deliens et al., 2015). The time that could theoretically be used for physical activity is being replaced with sedentary activities, like studying and using the computer for homework. Grasdalmoen et al. (2020) found that there's an immediate need to inform and encourage college-aged individuals to become more physically active due to the negative implications of being physically inactive and suffering from poor mental health (Grasdalmoen et al. 2020). Being named a major public health concern in various countries, with around 300 million individuals being afflicted from it, depression has been tackled in many ways, from medications to psychological therapies, and none have yet to have a substantial impact on the problem at hand, unlike exercise and physical activity. Despite there being research that shows the effect that it has in treating mild to moderate levels of depression, it still is an underused tactic in clinical practices (Chen et al., 2022). Like depression, anxiety disorders are very prevalent, with about 29% of those in the United States experiencing it in their

lifetimes (Anderson & Shivakumar, 2013). Even with so much overwhelming evidence from studies emphasizing the importance of physical activity, physical inactivity is still regarded as one of the greatest problems of the 21st century, with there being little to no improvement since the issue first arose (Trost et al., 2014 as cited in Wu et al., 2015). The likelihood of bad habits of physical inactivity and sedentary behavior carrying over into late adulthood is extremely probable, stressing the importance of intervention and improvement (Kjønniksen et al., 2008). Depression has been named as the leading cause of diseases that are related to mental health and although it has been said to be reduced with the introduction of physical activity, the dose-response relationship between the two have yet to adequately explored (Pearce et al., 2022). Although anxiety disorders are very common, there are limited treatment options available and a lack of evidence as to the effectiveness of physical activity and exercise in treating anxiety, as well as the intensity levels required to see improvement in those individuals (Aylett et al., 2018). This stresses the importance for further research in this field of study to find impactful treatments to mental health disorders, like anxiety and depression.

Social Media Addiction, Digital Addiction, and Mental Health

As technology continues to make groundbreaking developments, computers, the Internet, and social media are developing into major influences and have grown into more than recreational activities (Kim et al. 2005). The popularity that social media has gained over the past decades is a result of the swift development of the Internet and the role it plays in interpersonal communication. Researchers found that means of instant communication, such as emailing, texting, and instant messaging, are favored heavily when compared to face-to-face communication, inadvertently leading to higher chances of developing social anxiety and making

an individual more avoidant (Hoge et al., 2017). Some studies also believe that the relationship between digital addiction and social anxiety is conversely related, finding that having access to nonpersonal communication helps to reduce preexisting social anxiety (Darcin et al., 2016). Social media disorder is defined as an addiction in which an individual gives excessive attention to and devotes time and energy to social media, through strong, irresistible urges (Andreassen & Pallesen, 2014). Similarly, digital addiction is characterized as the uncontrollable, continuous, and chronic overuse of digital devices (Dresp-Langley & Hutt, 2022). Studies on social media disorders among Chinese students found the rate of addiction to be as high as 20.9% in some instances (Jianling and Chang, 2019, as cited in Lei et al., 2022). A Pew Research Center Survey of the United States found that approximately 78% of 18 to 24-year-olds use various types of social media outlets, including Snapchat, at least multiple times a day (Smith and Anderson, 2018). The dramatic reliance on and increase in the Internet and social media has led to various psychological changes (Kim et al., 2005). When looking at what factors led to social anxiety, studies point towards social media and digital addiction being the cause (Kong et al. 2020). Feelings of anxiety were said to be heightened by the constant urge to be continually connected to social media and digital devices (Hoge et al.,2017). Likewise, depression can also be named as a direct result of increased use of technology and its counterparts, like social media and smartphones, with numerous studies citing that this specific form of addiction has positive correlations with leading to depression (Aydin et al., 2021). With many individuals grasping for the Internet for social support, they are more likely to have internet addiction as a direct result of that, leading to changes in emotional regulation, social relationships, and psychological problems, such as depression (Tsai & Lin, 2001; Young & Rodgers, 2009). In conducting a longitudinal study of adolescents, researchers found that more significant use of digital devices,

at specific guidelines, showed an association with elevated levels of depression only one year later (Bickham et al.,2015). Based on this, there is an urgent need for research into social media and digital addiction and how it can be combatted to lessen the effects on mental health in college students.

Methods

This study was conducted in January 2024 and was approved by the Institutional Review Board (IRB) at Western Kentucky University (2133778-2). Written informed consent was obtained from all participants. The participants in this study were selected from respondents to a university-wide questionnaire via their student email, conducted at Western Kentucky University, located in Bowling Green, Kentucky. The survey, administered via Qualtrics, began with a brief description of the study itself, immediately followed by a detailed, comprehensible informed consent, explaining the rights they had as participants, perceived risks and benefits of their participation, and our means of keeping their personal information confidential. The survey could only be accessed after they signed the informed consent. Participants had to be at least 18 years old (inclusion criteria) and currently enrolled as students at WKU. Participants were recruited using the random cluster sampling method.

Statistical Analysis

A multiple regression using forced entry was computed to assess the relationship between an individual's depression and anxiety levels or outcome variables and their physical activity, social media use, sleep, and digital technology. The assumptions of variable type, independence of

observations, additivity, linearity, linear regression, influential cases and outliers, distributions of errors, multicollinearity with VIF and tolerances, the model's fit, and cook's distances will all be checked to support the adequacy of the model. The priori alpha level for this statistical analysis will be set a 0.05. All data was analyzed using IBM SPSS Statistics Version 29.0.1.0 for Mac was used for all statistical analyses. Data were presented as ± SD unless otherwise stated.

In evaluating the assumptions of our statistical model, several key aspects were considered. First, the variable type was verified, with continuous outcomes and continuous predictors in the analysis, meeting this assumption. The next consideration was the independence of observations, both within and between groups, which was confirmed. Additionally, an examination of additivity and linearity revealed that all predictor variables showed a linear relationship with the outcome variable, reinforcing the assumption of additivity. Also, no violations of the assumptions for linear regression were observed. Furthermore, an assessment of influential cases and outliers indicated the presence of a few outliers; however, these outliers did not exert a significant impact on the linearity of the data. Regarding the distribution of errors, it was observed that the histogram and Q-Q plots displayed normally distributed errors, with no prominent outliers and homoscedasticity in the graphs. Multicollinearity was addressed as well, with Variance Inflation Factors (VIF) below 10 and tolerances exceeding 0.2, thereby satisfying this assumption. To evaluate the model's fit for anxiety, the analysis identified 4 individuals with standardized residuals exceeding 2, accounting for 96% of cases. Furthermore, no individuals exhibited standardized residuals exceeding 2.5, amounting to 100% of cases. Importantly, all Cook's distances were found to be less than 1. These findings collectively support the adequacy of the model in meeting the assumptions and indicate its suitability for the analysis at hand. To evaluate the model's fit for depression, the analysis identified 3 individuals with standardized

residuals exceeding 2, accounting for 97% of cases. Furthermore, no individuals exhibited standardized residuals exceeding 2.5, amounting to 100% of cases. Importantly, all Cook's distances were found to be less than 1. These findings collectively support the adequacy of the model in meeting the assumptions and indicate its suitability for the analysis at hand.

Materials and Procedures

Independent Variables

Physical Activity

The study measured physical activity with the International Physical Activity Questionnaire (IPAQ), **Appendix A**. It has four areas of focus: leisure time, activities at home or outside, activities that are related to work and movement, and documenting their physical activities for the past seven days. Each area was asked about the frequency (days/week) and time (min/day) depending on the type of activity, such as low, medium, and high-intensity activity. Information in Table 1 (Kim et al., 2021) depicts the formulas required to calculate the number of physical activity participants complete within seven days in Metabolic Equivalents of Task (MET min/week). The data collected from this questionnaire were used to calculate the type and amount of physical activity everyone does. Scores from this questionnaire were computed from walking, moderate intensity exercises, and vigorous intensity exercises, and were used to calculate a total continuous physical activity score expressed in MET-minutes/week.

Table 1: Physical Activity category calculation formulas

Category	Equation
Low Intensity Walking MET-minutes/week =	3.3 x walking time (minutes) x walking days
Medium Intensity Moderate MET-minutes/week =	4.0 x moderate-intensity activity time (minutes) x days of moderate-intensity activity
High Intensity Vigorous MET-minutes/week =	8.0 x vigorous-intensity activity time (minutes) x days of vigorous-intensity activity
Total Amount of Physical Activity MET-minutes/week=	Walking + moderate-intensity + vigorous-intensity

Social Media Usage Amount

Social media addiction was measured using the Bergen Social Media Addiction Scale (BSMAS)**,** **Appendix B**, which is a self-reporting assessment composed of six items that are designed to measure an individual's risk of becoming addicted to social media (Andreassen et al., 2017). This questionnaire implements six core addiction elements, salience, mood modification, tolerance, withdrawal, conflict, and relapse, which was proposed by Griffiths (2014) to evaluate how individuals interact and experience social media. This assessment used an ordinal scale ranging from 1 to 5, with 1 = very rarely; 2 = rarely; 3 = sometimes; 4 = often; and 5 = very often. The BSMAS total score was calculated as the total sum of the six items that respondents were asked. Scoring higher indicated a stronger addiction to social media, with a score over 19 indicating an individual is at risk for cultivating problematic social media use (Banyai et al., 2017).

Digital Technology Usage Amount

To assess digital addiction, the Smartphone Addiction Scale-Short Version, **Appendix C**, compiled by (Kwon et al., 2013), was used. The scale consists of 10 elements covering various aspects, including loss of control, disruption, disregard, withdrawal, preoccupation, and tolerance while adopting the six-point Likert-like scale, from "1. Strongly Agree to 6. Strongly Disagree". Each question will be totaled to obtain the overall score for problematic smartphone use (PSU). A scoring range of 10-60, with a higher score indicating more severe forms of PSU. (Luk et al., 2018). We modified the 8th item of the original SAS-SV "Constantly checking my smartphone so as not to miss conversations between other people on Twitter and Facebook" by adding "Instagram and Snapchat", which were also relevant to this study population. In a previous study by Luk et al., (2018), the scale had good reliability and validity, with a Cronbach α value of 0.844.

Quality of Sleep

The tool used to measure the level of sleep quality is the Pittsburg Sleep Quality Index (PSIQ), **Appendix D** (Buysse et al., 1989). This measure of sleep quality consists of 10 questions for identifying a wide variety of factors related to sleep quality, including estimates of sleep duration sleep latency, the frequency of sleep-related problems, the severity of sleep-related problems, habitual sleep latency, sleep disturbances, the usage of sleep medicine, and daytime dysfunction, each ranging from 0-3 points. The total scores yield one global score, ranging from 0 to 21, with higher scores indicating a worse quality of sleep and a score higher

than 7 indicating poor sleep quality, as has been demonstrated in the Chinese population (Wu et al., 2015).

Dependent Variables

Anxiety

To assess the psychological state of the participants, their mental health status will be assessed, which includes anxiety and depression symptoms. To fully assess anxiety, the self-rating anxiety scale (SAS), **Appendix E** will be used. It is known to be a standard assessment instrument that has been examined for reliability and validity in the Chinese population (Wu et al., 2015). The scoring guidelines for the 20-item scale is on a 4-point Likert-like scale, "1- A little of the time to 4- Most of the time" (The Human Condition, 2023). There are 15 increasing anxiety level questions and 5 decreasing anxiety level questions. Raw scores are converted to an anxiety number with the use of a conversion chart as follows: "< 45: Normal Range, 45-59: Mild to Moderate Anxiety levels, 60-74: Severe Anxiety Levels" (Dunstan, D. A., & Scott, N., 2020). Higher scores indicate higher levels of anxiety. A score of 50 will be used as the cutoff for high levels of anxiety.

Depression

Depression will be assessed using the Center for Epidemiologic Studies Depression Scale (CES-D), **Appendix F**. CES-D is a commonly used self-report measure of symptoms of depression, using a 4-factor 20-item structure (Ling et al., 2008). Each question will have four answer choices: rarely or never (<1 day), some or a little bit time (1-2 days), occasionally or moderate time (3-4 days), and most or all of the time (5-7 days). Scoring of the questions is

based on if the question is worded “negatively” or “positively” (Radloff, L.S., 1977). Items 1-3, 5-7, 9-11, 13-15, and 17-20 are scored from 0 to 3, with “0” being “rarely or none of the time” and “3” being most or all of the time. Items 4, 8, 12, and 16 are scored from 0 to 3, with “0” being “most or all of the time” and “3” being “rarely or none of the time”. Scoring higher on the CES-D indicates that greater depressive symptoms are present. Possible scores can range from 0 to 60, but a score of 16 will be used as a cutoff for high levels of depression.

Results

Participants and Demographics

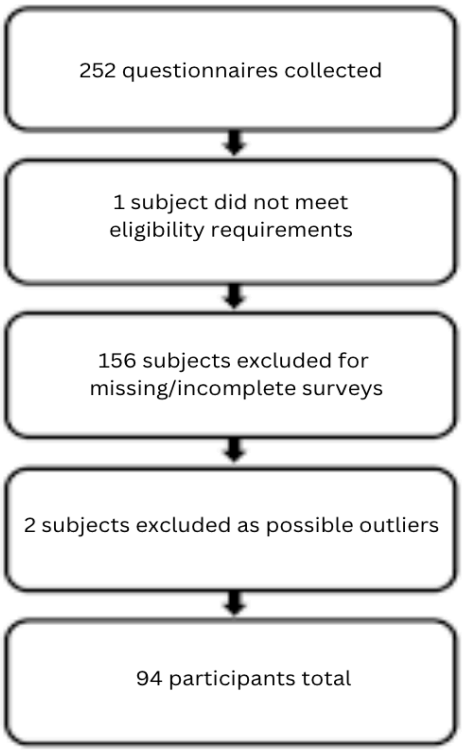
Students self-reported their demographic characteristics in a survey developed by our team, **Appendix G,** which included age, year in college, and major being studied. The age range of the participants was 18 to 40, with the average age being 22.5 $\pm$ 5.79 years.

A total of 252 students responded to the survey; one student did not meet the eligibility requirements (the student did not attend WKU). A total of 158 students were excluded for missing or incomplete survey responses on key details on depression, physical activity, and social media use related questions. Therefore, there were a total of 94 participants who were studied in the research (Figure 1). The demographic characteristics of participants have been displayed in Table 2. A complete list of majors is located in **Appendix H.**

Table 2: Demographics

Total (N)	N= 94
Gender	
Female	14 (14.9%)
Male	3 (3.2%)
Other	2 (2.1%)
No Entry Recorded	75 (79.8%)
Age (mean + SD)	22.5 + 5.79
Marital Status	
Single	81 (86.2%)
Married	10 (10.6%)
Separated	0 (0.0%)
Divorced	2 (2.1%)
Widowed	1 (1.1%)
Race	%
African American	
Caucasian	3 (3.2%)
Asian/Pacific Islander	80 (85.1%)
Latino	2 (2.1%)
Other	4 (4.3%)
	5 (5.3%)
Year	%
Freshman	
Sophomore	28 (29.8%)
Junior	14 (14.9%)
Senior	18 (19.1%)
Graduate-Level	17 (18.1%)
Doctorate-Level	14 (14.9%)
	3 (3.2%)
Major*	List included in appendix
Residence	
On-Campus	36 (38.3%)
Off-Campus	58 (61.7%)
Anxiety Scores (mean + SD)	53.82 + 3.59
Depression Scores (mean + SD)	32.11 + 10.29

Figure 1: Flow chart of participants



Anxiety

A multiple linear regression using forced entry was performed to determine how anxiety among college students related to and interacted with digital/social media addiction, sleep, and physical activity. A singular block contained each predictor variable and one outcome variable. The model showed a significant F change. Results revealed to be significant ($F_{4,89} = 11.338$; $p < 0.001$) and explains about 34% of the variance ($R = 0.338$; SEE = 9.16 anxiety). A total of 17 participants (18.09%) who were at or above the cutoff for displaying symptoms of anxiety.

Depression

A multiple linear regression using forced entry was performed to determine how depression among college students related to and interacted with digital/social media addiction, sleep, and physical activity. A singular block contained each predictor variable and one outcome variable. The model showed a significant F change. Results revealed to be significant ($F_{4,89} = 9.086$; $p < 0.001$) and explains about 29% of the variance (R = 0.290; SEE = 11.52 depression). A total of 65 participants (69.1%) who were at or above the cutoff for displaying symptoms of depression.

Coefficients and Confidence Intervals Depression

Table 3: Depression Regression Table

Depression	***B***	***SE B***	**β**	***t***	***p***
Sleep	1.542	.360	.405	4.284	<0.001*
Social Media Addiction	.647	.292	.261	2.220	.029*
Physical Activity	.000	.001	-.049	-.532	0.596
Digital Addiction	.079	.163	.054	.488	.627

The intercept, β0, was estimated at 1.977 points, implying an average depression score baseline when all independent variables are held at zero. Taken together, the two strongest predictors of depression in our model were sleep and social media addiction.

· Sleep (X4): Sleep emerged as a significant predictor, with a 1.542-point increase in scores for depression levels (β4 = 1.542) and a confidence interval of [.827, 2.257], suggesting a profound

influence of quality of sleep on depression. For every 1 unit increase in sleep score (indicating worse sleep), there will be a 1.542 increase in depression scores.

· Social Media Addiction (X2): Regular social media use contributed an additional .647-point increase in depression (β2 = .647), with the confidence interval ranging from [.068 to 1.227], reinforcing the importance of lessening social media use. For every one-unit increase in social media use, there will be a .647 increase in depression score.

· Physical Activity(X1): Each additional hour of physical activity was associated with a .000-point increase in depression (β1 = .000), with a 95% confidence interval of [-.002, .001], which is not statistically significant, showing that more physical activity does not influence depression scores.

· Digital Addiction (X3): Each one-unit increase in digital addiction score lead to a .079-point increase in depression scores (β3 = .079) and a confidence interval of [-.244, .403], which is not statistically significant.

Anxiety

Table 4: Anxiety Regression Table

Anxiety	*B*	*SE B*	β	*t*	*p*
Sleep	1.642	.286	.524	5.736	<.001*
Social Media Addiction	.141	.232	.069	.608	.545
Physical Activity	-.001	.001	-.136	-1.543	.126
Digital Addiction	-.025	.129	-.020	.849	.849

The intercept, β0, was estimated at 32.540 points, implying an average anxiety score baseline when all independent variables are held at zero.

· Sleep (X4): Sleep emerged as a significant factor, with a 1.642-point increase in scores for anxiety levels (β4 = 1.642) and a confidence interval of [1.073, 2.210], suggesting a profound influence on quality of sleep on anxiety scores.

Social Media Addiction (X2): Regular social media use contributed an additional .141-point increase in anxiety (β2 = .141), with the confidence interval ranging from [-.320 to .602], but this did not achieve statistical significance in the model.

· Physical Activity(X1): Each additional hour of physical activity was associated with a -.001-point decrease in anxiety (β1 = -.001), with a 95% confidence interval of [-.002, .000].

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· Digital Addiction (X3): Digital Addiction led to a .025-point decrease in anxiety (β3 = -.025) and a confidence interval of [-.282, .233], but this result did not achieve statistical significance in the model.

In our exploration of the determinants of depression in a university setting, we employed a multiple linear regression model to assess the contributions of physical activity (X1), social media use (X2), smartphone use (X3), and sleep (X4). The model, specified as Y= 1.977 + .000X1 + .647X2 + .079X3 + 1.542X4 + ε, where Y represents depression, aimed to provide a comprehensive understanding of how these variables collectively influence depression in college students. The multiple linear regression analysis showed that the independent variable, sleep quality (PSQI), had a statistically significant impact on the dependent variable, depression (CESD) ($p < .001$). For every 1 unit change in physical activity score, there will be a 1.542 change in depression score. For every 1 standard deviation of movement in sleep score, the dependent variable, depression, increases by .405 standard deviations. There is a 95% chance that the value of the unstandardized coefficient is between .827 and 2.257.

Additionally, in our exploration of the determinants of anxiety in a university setting, we employed a multiple linear regression model to assess the contributions of physical activity (X1), social media use (X2), smartphone use (X3), and sleep (X4). The model, specified as Y= 32.540 - .001X1 + .141X2 - .025X3 + 1.642X4 + ε, where Y represents depression, aimed to provide a comprehensive understanding of how these variables collectively influence anxiety in college students. The multiple linear regression analysis also showed that the independent variable, sleep (PSQI), had a statistically significant relationship with the dependent variable, anxiety (SRAS)

(p< .001). For every 1 unit change in sleep score, there will be a 1.624 unit change in anxiety score. The higher the sleep score for an individual is, there will be higher rates of anxiety they face. For every 1 standard deviation of movement in the sleep score, the dependent variable, anxiety, increases by .524 standard deviations. We can be 95% confident that the value of the unstandardized coefficient is between 1.073 and 2.210.

While regression is the preferred method to explore these data in that it accounts for all variables in one model, the relationships between individual independent variables and outcome (dependent) variables were also analyzed. A summary of all p-values and r-values among independent and dependent variables is expressed in **Table 5** below. These data found that both sleep and social media addiction were significantly correlated to both depression and anxiety; suggesting that more time spent on social media and less time spent sleeping can both contribute to poorer mental health among college students. These results are also consistent with our regression analyses in that sleep and social media addiction appear to have the strongest impact on mental health outcomes.

Table 5: Relationships between Dependent (Anxiety and Depression) and Independent Variables (Sleep, Social Media Addiction, Digital Addiction, and Physical Activity).

Mental Health	**Sleep Quality**		**Social Media Addiction**		**Physical Activity**		**Digital Addiction**	
	r-value	p-value	r-value	p-value	r-value	p-value	r-value	p-value
Depression	.485*	<.001	.367*	<.001	-.118	.259	-.149	.151
Anxiety	.555*	<.001	.275*	.007	-.181	.081	-.136	.193

While the primary purpose of the study was to examine the relationships between variables and mental health outcomes, we also noted a significant relationship between physical activity levels and social media addiction ($r=-.208$, $p < .045$). There was also a significant relationship between social media addiction and digital addiction, with lesser addictions to smartphones relating to lower social media addiction ($r=.586$, $p < .001$). Information about the correlation amongst independent variables, as well as age, is provided below in **Table 6**.

Table 6: Average Scores of Individuals Who Presented with Anxiety and Depression Symptoms Compared to the Questionnaire Cutoffs

Independent Variables		Age	Sleep Quality	Physical Activity	Social Media Addiction	Digital Addiction
Age	**R-Value**	1	-.152	.108	-.167	.076
Sleep Quality	**R-Value**	-.152	1	-.054	.316**	-.109
Physical Activity	**R-Value**	.108	-.054	1	-.208*	.130
Social Media Addiction	**R-Value**	-.167	.316**	-.208*	1	-.586**
Digital Addiction	**R-Value**	.076	-.109	.130	-.586**	1

*. Correlation is significant at the 0.05 level.

**. Correlation is significant at the 0.01 level.

Discussion

Among WKU college students who were at least 18 years of age or older, there were several compelling findings noted. First, higher levels of social media addiction were associated with lower levels of physical activity in this population. Smartphone addiction (SAS) and social media score (BSMAS) were highly correlated as well, with a lesser addiction to smartphones

relating to lower social media score/usage. Poor sleep scores and increased social media addiction were both positively correlated with higher depression scores. Last, less sleep was related to higher levels of anxiety.

For both anxiety and depression, regression analysis suggests that our variables/our model explained about 34% and 29% (respectively) of the variance, which were both statistically significant. Regression analyses (when all variables were included in the model) suggested that less sleep is the strongest predictor of anxiety scores. Both sleep and social media addiction were significant predictors of depression. When looking at variables independently/outside of the regression model, sleep scores and social media addiction both appeared to influence anxiety and depression.

Mental health, among college students especially, is extremely important, as it is essential to their success and overall health and well-being. Given that nearly 70% of our study sample reported depression levels at or above the cutoff for potentially having depression, it is critically important to understand the variables that could be contributing to depressive symptoms. With the concerns of their mental health continuing to rise, it is clear that this ongoing problem is deeper than just surface level (American Psychiatric Association, 2023). From the stresses of depending on family for financial support due to not holding any part or full-time job to larger academic loads than when in high school to "taking on more adult-like responsibilities without having yet mastered the skills and cognitive maturity of adulthood" would cause any young college student to spiral into anxiety or depression (Pedrelli et al., 2014). College-aged individuals are also the population most at risk for developing onset mental health disorders, due to most disorders having peak emergence during young adulthood years (Pedrelli et al., 2014). Kessler et al. (2005) found that 75% of individuals who have been diagnosed with a mental

health disorder will have had their first onset by the age of 25 (Kessler et al., 2005). A study by Blanco et al. (2008) found that anxiety was the most prevalent of mental health disorders among college students, with about 11.9% being afflicted (Blanco et al., 2008). Blanco et al. (2008) and Eisenburg et al. (2013) also found that depression had a prevalence of 7 to 9% among college students (Blanco et al., 2008 & Eisenburg et al., 2013). With multiple studies outlining the rate at which college students are being diagnosed with mental health disorders, specifically anxiety and depression, this is an issue that needs to be addressed as it is extremely problematic.

There is increasing evidence that suggests that physical activity is directly linked to numerous health benefits (Janssen & Leblanc, 2010). This is consistent with previous work among young populations, demonstrating a relationship between physical activity and mental health (Biddle & Asare, 2011). Studies have also demonstrated physical activity could influence on the mental health of college students, specifically (Adam et al., 2007). Some of the possible mechanisms responsible for the benefits of physical activity on mental health could include an increase in serotonin or other neurotransmitters that are associated with the "endorphin effect". It is well-established that physical activity has a profound influence on brain health and cognition in young adults (Themanson et al., 2008). While physical activity levels were not significant predictors in our regression models, they were correlated with social media addiction, which was a significant predictor. It is still important to consider ways to help college-aged students spend less time on the phone and more time being physically active, not only for mental health but for physical health (which was not assessed in the present study).

The use of social media and digital technology is highly prevalent among college-aged adults, and it can have important consequences on mental health status and cognitive development (Iannotti et al., 2009), as well as proper sleep patterns. Khattak et al., 2023 found

that, on average, college students spent about 3 hours on social media daily, with 41.1% being on YouTube and 37.1% being on Instagram. It was also found that about 87% of students used social media to search for subject-related information and watch related videos (Khattak et al., 2023). In another study by Kolhar et al. (2021), it was found that 97% of students used social media platforms, with 35% using it to communicate with others, while the other 43% used it to pass time. It was also discovered that 57% of the participants were addicted to social media, 52% disclosed that social media use impacted their learning, 66% felt more of an attraction to social media than learning, and 74% used social media in their free time as opposed to learning activities (Kolhar et al., 2021). Finally, Kolhar et al. 2021 also found that delayed bedtime was found to be the credit of social media, with 68% of participants placing the blame on social media and 59% noting that social media impacted their social interactions (Kolhar et al., 2021). In addition to social media, the use of screen time and mobile Internet technology, including TV, tablets, computers, and smartphones, amongst young people has multiplied substantially within the last decade, becoming intertwined with their everyday lives (Qiu et al., 2021). A lot of the increase in screen time and social media use can also be credited to Fear of Missing Out or FOMO, as continued notifications cause them to be pressured to be constantly online and anxiety when the ability to immediately respond is hindered (Nakshine et al., 2022). There was also found to be a strong correlation between increased social media use and bad sleep patterns, as using the Internet at nighttime suggests that over-exposure to screens before bedtime could lead to a disruption of the circadian rhythms or sleep distribution due to continual notifications (Appel et al., 2022; Johnson et al., 2006). Appel et al. (2022) also discovered there to be a higher mental workload in those individuals who spent more time online, which was due to increased stress

levels, multitasking, and poor quality and quantity of sleep. All of these factors combined were found to have led to the deterioration of health (Appel et al., 2022).

Similarly, Hamer et al. (2010) demonstrated an independent association of screen time with the psychological health of adults (Hamer et al., 2010). The results of our study suggest that high levels of digital technology and social media screen time paired with low levels of physical activity increase the risk of developing or possessing mental health issues, like depression and anxiety. When looking at how social media use directly relates to depression, there were higher levels of depression that were associated with social media use. There was found to be a negative relationship between self-esteem and social media use, with lower self-esteem scores related to higher levels of social media use and emotional investment in social media (Taylor-Jackson & Moustafa, 2021). This could be due to how different social media platforms are used, like Instagram, which has a heavy reliance on images that remain in pages "permanently, on comparison to Snapchat, whose images are deleted after 24 hours, which allows for reflection and comparison to other individuals, creating a distorted reality for individuals (RSPH, 2017). Comparing the effects of social media use on anxiety, those who have social anxiety are more prone to using social media at a higher frequency and more passively than other individuals, due to the fear and anxiety of being judged and/or mistreated in social situations, limiting their ability to have purposeful relationships (O'Day & Heimberg, 2021). O'Day & Heimberg (2021) also found that this could result in individuals with social anxiety preferring online interactions over in-person interactions, increasing the chances that they will have more frequent online interactions (O'Day & Heimberg, 2021).

Screen time has also been highly correlated with an increased risk of developing metabolic syndrome, which is a multitude of factors that "directly increase the risk of developing

cardiovascular disease (CVD) and type 2 diabetes mellitus (T2DM) (Wijndaele et al., 2011; Oliveria & Guedes et al., 2016), and metabolic syndrome is directly associated with poor mental health (Goldbacher & Matthews, 2007). Miranda et al. (2020) found that a combination of screen-based activity and physical inactivity was linked to increased levels of inflammatory biomarkers, which are the main pathways to dyslipidemia, insulin resistance, and cardiovascular disease (Miranda et al., 2020). These findings could represent potential mechanisms that explain the link between mental health, screen time, and social media use.

Limitations

There are some limitations to the present study. First, the population that was chosen for the study is not completely generalizable to the population as a whole but, only is for young adults between the ages of 18 and 24 who attend college. Another limitation of the study that may have impacted the results of physical activity levels, quality of sleep received, social media addiction levels, digital technology use, and mental health problems being assessed by self-reported questionnaires. Therefore, recall and reporting biases could not be avoided. An additional limitation of the present study is the time of year and point of the semester that the study took place. Due to conditions like seasonal depression, this time of year could have caused participants to unintentionally provide false reports of the information that was entered in the questionnaires, mainly under the sections about mental health and depression. So, conducting a broader study that takes place in all seasons could allow for more accurate data collection. Similarly, the collection of data during the beginning of the semester, which is arguably the least stressful time during school, could also have given way for inaccurate data to be reported on questionnaires. This is because entries could look drastically different if taken during a time

when students were stressed, with factors like anxiety and depression having a likely chance of being higher, while sleep, physical activity, social media use, and digital technology use being lower. Another notable and similar limitation is that depression and anxiety levels can ebb and flow from week to week, day to day, and even hour to hour, and there is no sophisticated way to capture this for each participant. However, we did ask that they report how they currently feel as accurately as possible. For this reason, a longitudinal study would give the best chance of avoiding these issues, since data could be collected over a significant amount of time and could consider the different changes that can occur in a typical college semester. An additional limitation that was present in the study was found in the time constraints of each questionnaire. When looking at what time each questionnaire was referencing for the participants to base their answers on, there were varying times used. For example, the IPAQ wanted participants to look back to the past week, thinking about how much they were physically active, while the SAS had no timeframe in which the participants should use. On the other hand, the sleep questionnaire wanted them to reference the past month. Despite each of the questionnaires being validated, this could allow for issues in reporting the data for participants and the varying degree of times can lead to confusion and improper recording of the questionnaires. Similarly, due to the period that these questionnaires were created and validated, the scales may only be valid for those specific time frames. However, all tools used were validated for the time frame in which they were used. The last limitation of the study is that it only assessed anxiety and depression symptoms from the participant but not clinically diagnosed depression and anxiety, meaning that there could be differences between self-reported anxiety and depression and clinically diagnosed anxiety and depression. During the process of collecting questionnaire data, there was an issue with receiving all genders for the participants and it was only realized after more than half of the questionnaires

were collected. Therefore, with proper data collection gender differences will be able to be tested amongst this population, adding another factor to the study.

Strengths

Despite the above limitations, the present study highlights the importance of associations between physical activity levels, quality of sleep, social media use, and digital technology amongst each other and on mental health, mainly depression and anxiety in Western Kentucky college students. This study is the only current study to examine all these factors in the form of a regression model, making it a more accurate representation of the relationship between all of these variables. The use of validated tools, like the questionnaires, instead of tools created specifically for this study also provides strength to this study. Another strength lies with the number of individuals we were able to get to take the questionnaires, as with qualitative studies the more participants the better the results can be more statistically significant, with smaller margins of error, lower standard deviations, and reduced risk of biases.

Future Directions

Future research should measure the impacts of sleep and/or physical activity interventions on the mental and physical health of college-aged students. Studies such as these could determine cause-effect vs. assessing predictors and relationships as was performed in this cross-sectional observational study. It should also focus on examining the differences amongst genders, as with proper data collection, there could be some important data that comes from this. Finding ways to better answer participants' questions (perhaps in person) could strengthen future studies as well. A longitudinal study that examines both sides, using/not using social media and

digital technology, physical activity/inactivity, and quality/poor sleep, in a controlled setting where depression and anxiety are being tracked could show the real-time effects of both the dependent and independent variables. Being able to adjust the rates at which participants are engaging with the variables and which participants have the positive or negative variables could give deeper insight into the effects of each. Finding ways in which the combination of the six questionnaires could be shorter may be important in yielding a higher number of participants. Due to 157 questionnaires having to be thrown out because they were incomplete/missing data, better results may have been achieved if the survey was shorter, and/or if there were incentives upon completion. Lastly, it may be beneficial to pull information from smartphones, which tracks the number of hours that an individual is active on their phone and which apps they spend their time on. This could provide objective data (vs self-reported) into what they are using on their phones, and at which rates they are using it. People may not always want to admit how much they use and rely on their phones, and the objective data would provide a clear indicator or time spent on the phone and how this time is being used (social media vs email vs texting, etc…)

Conclusion

The results of the study suggest sleep is an important predictor of both anxiety and depression and that social media addiction is a significant predictor of depression scores. Our findings suggest that interventions are needed to reduce social media and digital technology use and improve sleep quality in the routines of young college-aged adults, all to improve mental health.

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Appendix A

International Physical Activity Questionnaire (IPAQ):

Think about all the vigorous activities that you did in the last 7 days. Vigorous physical activities refer to activities that take hard physical effort and make you breathe much harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

Q1

1. During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?

0 days

Q2

Display this question

If 1. During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling? No vigorous physical activities Is Not Selected

2. How much time did you usually spend doing vigorous physical activities on ONE of those days?

Click here to edit choices

0 hours

Think about all the moderate activities that you did in the last 7 days. Moderate activities refer to activities that take moderate physical effort and make you breathe somewhat harder than normal. Think only about those physical activities that you did for at least 10 minutes at a time.

Q3

3. During the last 7 days, on how many days did you do MODERATE physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking.

0 days

Q4

Display this question

If 3. During the last 7 days, on how many days did you do MODERATE physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking. No moderate physical activity Is Not Selected

4. How much time did you usually spend doing moderate physical activities on one of those days?

0 hours

Q5

5. During the last 7 days, on how many days did you walk for at least 10 minutes at a time?

0 days

Q6

Display this question

If 5. During the last 7 days, on how many days did you walk for at least 10 minutes at a time? No Walking Is Not Selected

6. How much time did you usually spend walking on one of those days?

0 hours

Page Break

The last question is about the time you spent sitting on weekdays during the last 7 days. Include time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television.

Q7

7. During the last 7 days, how much time did you spend sitting on a week day?

0 hours

Appendix B

Bergen Social Media Addiction Scale (BSMAS):

Instructions: Here are six statements to consider. For each, answer: (1) very rarely, (2) rarely, (3) sometimes, (4) often, or (5) very often.

+ Add page break

Q1

1. You spend a lot of time thinking about social media or planning how to use it.

- 1. Very rarely
- 2. Rarely
- 3. Sometimes
- 4. Often
- 5. Very often

Q2

2. You feel an urge to use social media more and more

- 1. Very rarely
- 2. Rarely
- 3. Sometimes
- 4. Often
- 5. Very often

Q3

3. You use social media in order to forget about personal problems

- 1. Very rarely
- 2. Rarely
- 3. Sometimes
- 4. Often
- 5. Very often

Q4

4. You have tried to cut down on the use of social media without success

- 1. Very rarely
- 2. Rarely
- 3. Sometimes
- 4. Often
- 5. Very often

Q5

5. You become restless or troubled if you are prohibited from using social media

- 1. Very rarely
- 2. Rarely
- 3. Sometimes
- 4. Often
- 5. Very often

Q6

You use social media so much that it has had a negative impact on your job/studies

- 1. Very rarely
- 2. Rarely
- 3. Sometimes
- 4. Often
- 5. Very often

Appendix C

Smartphone Addiction Scale (SAS)

Instructions: The following questions relate to your usual smartphone habits during the past month only. Please answer all questions.

Q1

Missing planned work due to smartphone use

- 1. Strongly Agree
- 2. Agree
- 3. Somewhat Agree
- 4. Somewhat Disagree
- 5. Disagree
- 6. Strongly Disagree

Q2

Having a hard time concentrating in class, while doing assignments, or while working due to smartphone use

- 1. Strongly Agree
- 2. Agree
- 3. Somewhat Agree
- 4. Somewhat Disagree
- 5. Disagree
- 6. Strongly Disagree

Q3

Feeling pain in the wrists or at the back of the neck while using a smartphone

- 1. Strongly Agree
- 2. Agree
- 3. Somewhat Agree
- 4. Somewhat Disagree
- 5. Disagree
- 6. Strongly Disagree

Q4

Will not be able to stand not having a smartphone

- 1. Strongly Agree
- 2. Agree
- 3. Somewhat Agree
- 4. Somewhat Disagree
- 5. Disagree
- 6. Strongly Disagree

Q5

Feeling impatient and fretful when I am not holding my smartphone

- 1. Strongly Agree
- 2. Agree
- 3. Somewhat Agree
- 4. Somewhat Disagree
- 5. Disagree
- 6. Strongly Disagree

Q6

Having my smartphone in my mind even when I am not using it

- 1. Strongly Agree
- 2. Agree
- 3. Somewhat Agree
- 4. Somewhat Disagree
- 5. Disagree
- 6. Strongly Disagree

Q7

I will never give up using my smartphone even when my daily life is already affected by it

- 1. Strongly Agree
- 2. Agree
- 3. Somewhat Agree
- 4. Somewhat Disagree
- 5. Disagree
- 6. Strongly Disagree

Q8

Constantly checking my smartphone so as to not miss conversations between other people of Whatsapp, Facebook, or Instagram

- 1. Strongly Agree
- 2. Agree
- 3. Somewhat Agree
- 4. Somewhat Disagree
- 5. Disagree
- 6. Strongly Disagree

Q9

Using my smartphone longer than I had intended

- 1. Strongly Agree
- 2. Agree
- 3. Somewhat Agree
- 4. Somewhat Disagree
- 5. Disagree
- 6. Strongly Disagree

+ Add page break

Q10

The people around me tell me that I use my smartphone too much

- 1. Strongly Agree
- 2. Agree
- 3. Somewhat Agree
- 4. Somewhat Disagree
- 5. Disagree
- 6. Strongly Disagree

Appendix D

Pittsburgh Sleep Quality Index (PSQI):

INSTRUCTIONS: The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month. Please answer all questions.

Q1

During the past month, what time have you usually gone to bed at night?

Q2

During the past month, how long (in minutes) has it usually taken you to fall asleep each night?

Q3

During the past month, what time have you usually gotten up in the morning?

Q4

During the past month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed.)

Page Break

For each of the remaining questions, check the one best response. Please answer all questions.

Q5a

During the past month, how often have you had trouble sleeping because you:

a. Cannot get to sleep within 30 minutes

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

Q5b

b. Wake up in the middle of the night or early morning

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

Q5c

c. Have to get up to use the bathroom

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

Q5d

d. Cannot breathe comfortably

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

Q5e

e. Cough or snore loudly

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

Q5f

f. Feel too cold

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

Q5g

g. Feel too hot

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

Q5h

h. Had bad dreams

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

Q5i

i. Have pain

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

Q5j

j. Other reason(s), please describe:

Q5k

k. How often during the past month have you had trouble sleeping because of this? (Answer(s) from previous question)

- ○ Not during the past month
- ○ Less than once a week
- ○ Once or twice a week
- ○ Three or more times a week

Q6

During the past month, how would your rate your sleep quality overall?

- ○ Very good
- ○ Fairly good
- ○ Fairly bad
- ○ Very bad

Q7

During the past month, how often have you taken medicine to help you sleep (prescribed or "over the counter")?

- ○ Not during the past month
- ○ Less than once a week
- ○ Once or twice a week
- ○ Three or more times a week

Q8

During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?

- ○ Not during the past month
- ○ Less than once a week
- ○ Once or twice a week
- ○ Three or more times a week

Q9

During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

- ○ No problem at all
- ○ Only a very slight problem
- ○ Somewhat of a problem
- ○ A very big problem

Q10

Skip to

End of Block if No bed partner or room mate Is Selected

Do you have a bed partner or room mate?

- ○ No bed partner or room mate
- ○ Partner/room mate in other room
- ○ Partner in same room, but not same bed
- ○ Partner in same bed

Q10a

If you have a room mate or bed partner, ask him/her how often in the past month you have had . . .

a. Loud snoring

- ○ Not during the past month
- ○ Less than once a week
- ○ Once or twice a week
- ○ Three or more times a week

Q10b

b. Long pauses between breaths while asleep

- ○ Not during the past month
- ○ Less than once a week
- ○ Once or twice a week
- ○ Three or more times a week

Q10e

e. Other restlessness while you sleep; please describe:

Q10f

f. How often during the past month have you had restlessness while you sleep? (Answer(s) from previous question)

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

Q10c

c. Legs twitching or jerking while you sleep

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

Q10d

d. Episodes of disorientation or confusion during sleep

- Not during the past month
- Less than once a week
- Once or twice a week
- Three or more times a week

Appendix E

Self-rating Anxiety Scale (SAS):

Instructions: For each item, please select the answer choice which best describes how often you felt this way during the past several days.

Q1

1. I feel more nervous and anxious that usual

- A little of the time
- Some of the time
- Good part of the time
- Most of the time

+ Add page break

Q2

2. I feel afraid for no reason at all

- A little of the time
- Some of the time
- Good part of the time
- Most of the time

Q3

3. I get upset easily or feel panicky

- A little of the time
- Some of the time
- Good part of the time
- Most of the time

Q4

4. I feel like I'm falling apart and going to pieces

- A little of the time
- Some of the time
- Good part of the time
- Most of the time

Q5

5. I feel that everything is all right and nothing bad will happen

- ○ A little of the time
- ○ Some of the time
- ○ Good part of the time
- ○ Most of the time

Q6

6. My arms and legs shake and tremble

- ○ A little of the time
- ○ Some of the time
- ○ Good part of the time
- ○ Most of the time

Q7

7. I am bothered by headaches, neck, and back pain

- ○ A little of the time
- ○ Some of the time
- ○ Good part of the time
- ○ Most of the time

Q8

8. I feel weak and get tired easily

- ○ A little of the time
- ○ Some of the time
- ○ Good part of the time
- ○ Most of the time

Q9

9. I feel cam and can sit still easily

- A little of the time
- Some of the time
- Good part of the time
- Most of the time

Q10

10. I can feel my heart beating fast

- A little of the time
- Some of the time
- Good part of the time
- Most of the time

11. I am bothered by dizzy spells

- ◯ A little of the time
- ◯ Some of the time
- ◯ Good part of the time
- ◯ Most of the time

Q12

12. I have fainting spells of feel like it

- ◯ A little of the time
- ◯ Some of the time
- ◯ Good part of the time
- ◯ Most of the time

Q13

13. I can breathe in and out easily

- ◯ A little of the time
- ◯ Some of the time
- ◯ Good part of the time
- ◯ Most of the time

14. I get numbness and tingling in my fingers and toes

- ○ A little of the time
- ○ Some of the time
- ○ Good part of the time
- ○ Most of the time

Q15

15. I am bothered by stomach aches or indigestion

- ○ A little of the time
- ○ Some of the time
- ○ Good part of the time
- ○ Most of the time

Q16

16. I have to empty my bladder often

- ○ A little of the time
- ○ Some of the time
- ○ Good part of the time
- ○ Most of the time

Q17

17. My hands are usually dry and warm.

- A little of the time
- Some of the time
- Good part of the time
- Most of the time

Q18

18. My face gets hot and blushes

- A little of the time
- Some of the time
- Good part of the time
- Most of the time

Q19

19. I fall asleep and easily get a good night' rest

- ◯ A little of the time
- ◯ Some of the time
- ◯ Good part of the time
- ◯ Most of the time

Q20

20. I have nightmares

- ◯ A little of the time
- ◯ Some of the time
- ◯ Good part of the time
- ◯ Most of the time

Appendix F

Center for Epidemiological Studies Depression Scale (CES-D):

Instructions: Please read each question carefully, then select one of the statements t to indicate how you felt or behaved during the past week, including today.

Q1

During the past week:

1. I was bothered by things that usually don't bother me

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q2

During the past week:

2. I did not feel like eating; my appetite was poor

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q3

During the past week:

3. I felt that I could not shake off the blues even with help from my family and friends

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q4

During the past week:

4. I felt that I was just as good as other people

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q5

During the past week:

5. I had trouble keeping my mind on what I was doing

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q6

During the past week:

6. I felt depressed

- ◯ Rarely or none (less than 1 day)
- ◯ Some or a little of the time (1-2 days)
- ◯ Occasionally or a moderate amount of the time (3-4 days)
- ◯ Most or all of the time (5-7 days)

Q7

During the past week:

7. I felt that everything that I did was an effort

- ◯ Rarely or none (less than 1 day)
- ◯ Some or a little of the time (1-2 days)
- ◯ Occasionally or a moderate amount of the time (3-4 days)
- ◯ Most or all of the time (5-7 days)

Q8

During the past week: 9. I thought my life had been a failure

During the past week:

8. I felt hopeful about the future

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q9

During the past week:

9. I thought my life had been a failure

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q10

During the past week:

10. I felt fearful

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q11

During the past week:

11. My sleep was restless

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q12

During the past week:

12. I was happy

- Rarely or none (less than 1 day)
- Some or a little of the time (1-2 days)
- Occasionally or a moderate amount of the time (3-4 days)
- Most or all of the time (5-7 days)

Q13

During the past week:

13. I talked less than usual

- Rarely or none (less than 1 day)
- Some or a little of the time (1-2 days)
- Occasionally or a moderate amount of the time (3-4 days)
- Most or all of the time (5-7 days)

Q14

During the past week:

14. I felt lonely

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q15

During the past week:

15. People were unfriendly

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q16

During the past week:

16. I enjoyed life

- ◯ Rarely or none (less than 1 day)
- ◯ Some or a little of the time (1-2 days)
- ◯ Occasionally or a moderate amount of the time (3-4 days)
- ◯ Most or all of the time (5-7 days)

Q17

During the past week:

17. I had crying spells

- ◯ Rarely or none (less than 1 day)
- ◯ Some or a little of the time (1-2 days)
- ◯ Occasionally or a moderate amount of the time (3-4 days)
- ◯ Most or all of the time (5-7 days)

Q18

During the past week:

18. I felt sad

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q19

During the past week:

19. I felt that people disliked me

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Q20

During the past week:

20. I could not get "going"

- ○ Rarely or none (less than 1 day)
- ○ Some or a little of the time (1-2 days)
- ○ Occasionally or a moderate amount of the time (3-4 days)
- ○ Most or all of the time (5-7 days)

Appendix G

Demographic Information Form

Instructions: Please provide a response for each of the following questions. Please note, all this information will not be connected to you personally.

1. What is your age? _____

2. Do you live on campus or off campus? _____

3. A. What year are you currently in at Western Kentucky University?

- ○ Freshman
- ○ Sophomore
- ○ Junior
- ○ Senior
- ○ Graduate- Level
- ○ Doctorate- Level
- ○ I do not attend Western Kentucky University

3. B. What degree are you working towards? (ex: B.S. in Biology)_____

4. What is your marital status?

- ○ Single
- ○ Married
- ○ Separated
- ○ Divorced
- ○ Widowed

5. With which racial or ethnic category do you identify?

- ○ African American
- ○ Asian/Pacific Islander
- ○ Caucasian
- ○ Latino
- ○ Other: _____

6. What is your height? _____

7. What is your current weight? _____

8. A. How much time, per day, do you spend on your cell phone? _____

8. B. Based on the time reported in question #3, how much of that time is spent on social media?

_____

8. C. How much time is spent doing productive activities (homework, studying, note-taking)?

_____

9. Approximately what temperature do you set to go to sleep? _____

10. Are you currently employed?

○ Yes
○ No

11. How many hours do you work per week (on average)?_____

12. How would you describe your current mental health status?

○ Excellent
○ Very good
○ Good
○ Fair
○ Poor

13. A. Do you consume any form of caffeine?

○Yes
○ No

Appendix H

Academic Undergraduate Program	Major	Minor	Certificate	Pre-Prof ◊	Degree	JUMP*
Accounting	✓				BS	✓
Accredited Financial Counselor			✓			
Advanced Professionalism			✓			
Advertising	✓		✓		BA	
Africana Studies		✓				
Agriculture	✓	✓			BS	✓
Agriculture (Agribusiness)	✓				BS	
Agriculture (Agricultural Education)	✓				BS	
Agriculture (Agricultural Mechanization)	✓				BS	
Agriculture (Agronomy - Plant)	✓				BS	
Agriculture (Agronomy - Soil)	✓				BS	
Agriculture (Animal Science - Beef)	✓				BS	
Agriculture (Animal Science - Swine)	✓				BS	
Agriculture (Dairy Science)	✓				BS	
Agriculture (General Agriculture)	✓				BS	
Agriculture (Horse Science)	✓				BS	
Agriculture (Horticulture)	✓				BS	
Agriculture (Turf and Golf Course Management)	✓				BS	
American Sign Language Studies		✓				
Anthropology		✓				
Anthropology (Applied Anthropology)	✓				BA	
Anthropology (Archaeology)	✓				BA	
Anthropology (Biological Anthropology)	✓				BA	
Anthropology (Cultural Anthropology)	✓				BA	
Applied Data Analytics			✓			
Applied Statistics		✓				

Architectural Science	✓				BS	✓
Art History	✓	✓			BA	
Artificial Intelligence and Analytics (AIA)			✓			
Arts Administration		✓				
Asian Studies	✓	✓			BA	
Astronomy		✓				
Athletic Coaching		✓	✓			
Biochemistry	✓				BS	✓
Biology	✓	✓			BS	✓
Biophysics		✓				
Brewing and Distilling Arts & Sciences			✓			
Broadcasting	✓	✓				
Business Administration		✓				
Business Data Analytics	✓				BS	✓

Majors and Minors at WKU

Business Data Analytics	✓				BS	✓
Business Economics	✓				BS	✓
Chemistry	✓	✓				✓
Chemistry (ACS Certified)	✓				BS	
Chemistry (Foundations Chemistry)	✓				BS	
Chemistry (Teacher Education)	✓				BS	
Child and Family Services (Child and Family Services)	✓				BS	
Child and Family Services (Family and Consumer Science Education)	✓				BS	
Child Studies		✓				
Chinese	✓	✓			BA	
Chinese Studies			✓			
Citizenship and Social Justice			✓			
Civil Engineering	✓				BS	
Clinical and Community Behavioral Health		✓				

Majors and Minors at WKU

Commercial Music		✓				
Communication	✓		✓		BA	✓
Communication (Strategic Sport Communication)			✓			
Communication Disorders	✓				BS	
Computer Information Systems		✓				
Computer Information Technology	✓				BS	✓
Computer Science	✓	✓			BS	✓
Computer Science (General Concentration)	✓				BS	
Computer Science (Systems/Scientific Applications)	✓				BS	
Construction Management	✓				BS	
Creativity and Innovation Management			✓			
Criminology	✓	✓			BA	
Dance	✓	✓			BA	
Data Science	✓				BS	

Deaf Studies			✓			
Dental Hygiene	✓				BS, AS	
Early Childhood Education Director			✓			
Economic Data Analytics			✓			
Economics	✓	✓			BA	✓
Electrical Engineering	✓				BS	
Elementary Education	✓				BS	
Emergency Management Disaster Science			✓			
Engineering Technology Management	✓				BS	✓
English		✓				
English (Creative Writing)	✓	✓			BA	
English (Literature)	✓	✓			BA	
English (Professional Writing)	✓	✓	✓		BA	
English for Secondary Teachers	✓				BA	

Environmental and Occupational Health Science	✓				BS	
Environmental Health			✓			
Environmental, Sustainability, and Geographic Studies	✓				BS	
Esports Management			✓			
Executive Influence in Organizations			✓			
Exercise Science	✓				BS	✓
Facility and Event Management		✓				
Family Studies		✓				
Film	✓				BA	
Film Production	✓				BFA	
Film Production (Film Animation)	✓				BFA	
Film Studies		✓				
Finance	✓	✓			BS	
Finance (Analyst)	✓				BS	

Finance (Financial Services)	✓				BS	
Finance (General)	✓				BS	
Finance (Investment)	✓				BS	
Finance (Personal Finance Planning)	✓				BS	
Financial Planning			✓			
Floristry			✓			
Folklore		✓				
Food Service Design			✓			
Game Design			✓			
Gender & Women's Studies		✓				
Geographic Information Systems			✓			
Geological Sciences (Environmental Earth Science)	✓				BS	
Geological Sciences (General)	✓				BS	
Geological Sciences (Geology)	✓				BS	

Global Business		✓				
Graphic Design	✓	✓	✓		BFA	
Health Care Administration	✓	✓			BS	✓
Health Education and Health Promotion			✓			
Health Informatics			✓			
Health Information Management	✓				BS	
Health Sciences (Allied Health)	✓				BS	✓
Health Sciences (Health and Social Welfare)	✓				BS	✓
Health Sciences (Health Services Leadership & Management)	✓				BS	✓
History (Africana History)	✓	✓			BA	
History (Cultural History)	✓	✓			BA	
History (History of Science, Environment, and Medicine)	✓	✓			BA	
History (Legal & Constitutional History)	✓	✓			BA	
History (Peace, Conflict, & Human Rights)	✓	✓			BA	

History (Public History)	✓	✓			BA	
History (History of Identity)	✓	✓			BA	
Honors (Self-Designated Studies)	✓	✓			BA/BS	
Hospitality Management and Dietetics (Food, Nutrition, and Wellness)	✓				BS	
Hospitality Management and Dietetics (Hotel, Restaurant, and Tourism Management)	✓				BS	
Hospitality Management and Dietetics (Nutrition and Dietetics)	✓				BS	
Interactive Training and Leadership			✓			
Interdisciplinary Early Childhood Education (Non-Teacher Certification)	✓				BS	
Interdisciplinary Early Childhood Education (Teacher Certification)	✓				BS	
Interdisciplinary Professionalism and Success			✓			
Interdisciplinary Studies (Arts)	✓				AIS/BIS	
Interdisciplinary Studies (Business)	✓				AIS/BIS	
Interdisciplinary Studies (Education)					AIS	
Interdisciplinary Studies (Health)					AIS/BIS	

Interdisciplinary Studies (Humanities)	✓				AIS/BIS	
Interdisciplinary Studies (Organization and Communication of Ideas)	✓				AIS/BIS	
Interdisciplinary Studies (Science)	✓	✓			AIS/BIS	
Interdisciplinary Studies (Social and Behavioral Studies)	✓				AIS/BIS	
Interdisciplinary Studies (Social Justice/Equity Studies)					AIS	
Interdisciplinary Studies (Sustainability)	✓				BIS	
Interdisciplinary Studies (Technology)					AIS/BIS	
Interior Design and Fashion Merchandising (Fashion Merchandising)	✓				BS	
Interior Design and Fashion Merchandising (Interior Design)	✓				BS	
International Affairs	✓				BA	✓
Journalism	✓				BA	
Journalism Writing		✓				
Land Surveying			✓			
Latin American Studies		✓				
Legal Studies	✓				BA	

Long-Term Care Administration			✓			
Management (Business Administration)	✓				BS	✓
Management (Entrepreneurship)	✓				BS	✓
Management (Global Business)	✓				BS	✓
Management (Human Resources/Personnel Management)	✓				BS	✓
Management (Supply Chain Management)	✓				BS	✓
Managing Inclusive Organizations			✓			
Manufacturing Engineering Technology	✓				BS	✓
Marketing		✓				✓
Marketing (Sales)	✓	✓			BS	✓
Marketing (Social Media)	✓				BS	✓
Marketing (Strategic Marketing)	✓				BS	✓
Mathematical Economics	✓				BS	✓
Mathematical Economics (Actuarial Science)	✓				BS	

Mathematics (Fundamentals of Analysis and Discrete Math)	✓				BA	
Mathematics (Fundamentals of Applied Math)	✓				BA	
Mathematics (Fundamentals of Math Studies)	✓				BA	
Mathematics (General - Non-Teacher Certifiable)	✓	✓			BA	✓
Mathematics (Teacher Education)	✓				BA	
Mechanical Engineering	✓				BS	
Medical Laboratory Science	✓				BS	✓
Meeting and Convention Planning		✓				
Meteorology	✓				BS	✓
Middle Grades Mathematics	✓				BS	
Middle Level Education Language Arts Single Area Certification	✓				BS	
Middle Level Education Social Studies Single Area Certification	✓				BS	
Middle Level Education Social Studies/Language Arts Dual Certification	✓				BS	
Middle School Science	✓				BS	
Military Leadership	✓				BS	
Military Science		✓				
Molecular Biotechnology	✓				BS	
Music	✓	✓			BM/BA	
Music (Instrumental Performance)	✓				BM	
Music (Music Education - Instrumental P-12)	✓				BM	
Music (Music Education - Vocal P-12)	✓				BM	
Music (Music Education - Integrated P-12)	✓				BM	
Music (Vocal Performance)	✓				BM	
Music (Extended)	✓				/BA	
Neuroscience (Neuroscience major accepting students for Fall 2025)	✓	✓			BS	
Nonprofit Administration		✓				
Nursing	✓				ASN/BSN	
Occupational Safety and Health			✓			
Organizational Leadership	✓	✓	✓		BS	✓
Organizational Supervision (General Supervision)	✓				AA	

Organizational Supervision (Leadership)	✓				AA	
Organizational Supervision (Real Estate)	✓				AA	
Outdoor Experience Leadership		✓				
Paralegal Studies			✓			
Performing Arts (Acting)	✓				BFA	
Performing Arts (Musical Theatre)	✓	✓			BFA	
Performing Arts (Theatre Design and Technology)	✓				BFA	
Performing Arts (Theatre)	✓	✓			BFA	
Personal Branding			✓			
Philosophy	✓	✓			BA	
Physical Education (Health Education)	✓				BS	
Physical Education (Movement Studies)	✓				BS	
Physical Education (Teacher Education)	✓				BS	
Physics	✓				BS	
Physics (Physics Education)	✓				BS	
Piano Pedagogy		✓				
Political Science	✓	✓			BA	✓
Pre-Dentistry				✓		
Pre-Forestry				✓		
Pre-Law				✓		
Pre-Medicine				✓		
Pre-Occupational Therapy				✓		
Pre-Optometry				✓		
Pre-Pharmacy				✓		
Pre-Physical Therapy				✓		
Pre-Physician Assistant				✓		
Pre-Theology				✓		
Pre-Veterinary Medicine				✓		
Professional Legal Studies	✓				BA	
Psychological Science	✓	✓			BS	✓

Psychological Science (Applied Psychological Science)	✓				BS	✓
Psychological Science (Biobehavioral Psychology)	✓				BS	✓
Psychological Science (Clinical Psychological Science)	✓				BS	✓
Psychological Science (Cognitive Psychology)	✓				BS	✓
Psychological Science (Developmental Science)	✓				BS	✓
Psychological Science (Neuroscience)	✓				BS	✓
Psychological Science (Quantitative Psychology)	✓				BS	✓
Psychological Science (Social Psychology)	✓				BS	✓
Psychology	✓	✓			BA	
Psychology (Forensic Psychology)	✓				BA	✓
Psychology (Sport Psychology)	✓				BA	✓
Public Health	✓		✓		BS	✓
Public Relations	✓				BA	
Real Estate			✓			
Recreation, Park, and Nonprofit Administration (Comprehensive Study of	✓				BS	✓

Recreation, Park, and Nonprofit Administration (Essentials of Recreation, Parks, Events, and Tourism)	✓				BS	✓
Recreation, Park, and Nonprofit Administration (Nonprofit Administration)	✓				BS	✓
Religious Studies	✓	✓			BA	
Sales		✓	✓			
Science and Mathematics Education	✓				BS	
Social Studies	✓				BA	
Social Work	✓	✓			BSW	
Sociology	✓	✓			BA	✓
Sociology (Applied Community Activism/Community and Environment Focus)	✓				BA	
Sociology (Applied Community Activism/Social Inequality Focus)	✓				BA	
Sociology (Family, Gender, and Sexuality)	✓				BA	
Spanish	✓	✓	✓		BA	
Spanish (Communication)	✓				BA	
Spanish (Health Sciences and Health Care)	✓				BA	

Spanish (International Business)	✓				BA	
Spanish (Language and Cultures)	✓				BA	
Spanish (Legal Professionals)	✓				BA	
Special Education: Learning & Behavioral Disorders and Elementary Education	✓				BS	
Sport Management	✓				BS	✓
Sport Media and Communication			✓			
Strategic Communications			✓			
Strategies for Trauma-Informed Approaches to Improving Resilience			✓			
Systems Engineering		✓				
Teaching English as a Second Language		✓	✓			
Theatre	✓	✓			BA	
Tourism and Events		✓				
Visual Arts	✓				BFA	
Visual Arts (Animation)	✓	✓			BFA	
Visual Arts (Graphic Design)	✓	✓			BFA	
Visual Arts (Studio Concentration)	✓				BFA	
Visual Arts (User Experience Design)	✓		✓		BFA	
Visual Journalism and Photography	✓				BA	
Visual Journalism and Photography (Photography)	✓				BA	
Visual Journalism and Photography (Photojournalism and Documentary)	✓				BA	
Visual Studies (Studio Art)	✓	✓			BA	
Visual Studies (Art Education)	✓				BA	
Workforce Administration	✓				BS	
Workplace Communication			✓			
Worksite Health Promotion			✓			

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