The Effect of Social Media Usage on Sacred Heart University Student-Athletes Stress Levels

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Abstract: This research paper explores the relationship between social media usage and stress levels among student-athletes at Sacred Heart University. The paper argues that while technology has made college life easier, social media can have negative effects on mental health, particularly stress. The study uses a regression model to analyze data on stress levels and different variables. The data that has been collected is a cross- section data collected from a survey with 70 responses in a single-point in time. The results suggest that there is no direct effect between social media usage and stress levels among student-athletes, but that homework hours and GPA are significant predictors of stress levels. The paper concludes with policy recommendations and adds suggestions to the growing body of research on the relationship between technology and mental health.

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Introduction

Technology improvements have certainly been a major change in college life in the past years. While there is a popular belief that these developments have had a positive impact on student's others have an opposite opinion on this matter. Having laptops, tablets, smartphones, or even websites such as Gmail or Blackboard, make student's life easier and stressless, but with all positive technological creations, comes negative ones, such as social media applications. These platforms were generated with the objective of individuals creating social relationships in an easier way, but no one focused on the negative long-term effects of social media: mental health, especially stress. Excessive usage of social media can affect the mental health of the younger generation (Hilal Bashir, Shabir Ahmad Bhat 2017)

College students are faced with very stressful moments throughout their college life. Even though academic performance is important for undergraduates, many of them have other non-personal worries, such as being part of sports teams, clubs, organizations, Greek life, performing arts programs, volunteering, etc. This paper will mainly target Sacred Heart University student-athletes stress level relationship with social media usage.

Sacred Heart University is an NCAA Division I school, with 33 Division 1 teams. While these undergraduate athletes have the opportunity to be part of a sports team and compete at a high level they also have to focus on education and social life. Therefore, being a student-athlete is no easy task, it comes with sacrifices and a lot of mental health struggle. Nowadays with social media being part of student-athletes everyday life, these platforms can also be one of the main reasons for unhealthy stress. Usage of social networking applications are less helpful to students in remaining more focused and less stressed (The Hearty Soul, 2016)

This research study will focus on the effect of social media on stress in Sacred Heart University (SHU) student-athletes. The main goal of this study is to investigate whether extreme usage of social media has a negative role on SHU student- athletes' stress level. This research article will be divided in four sections. The first one will cover a literature review of five research papers. These papers will help understand moreover the variables discussed in the main question and they will support my findings. The second section will be the theoretical model. The next part of the research will submerge in the empirical section, which will be divided into a data section and a results section. Finally, a conclusion section will encompass a small summary and recommendations for further research.

I.   Literature Overview

The first research paper by authors Doan Aydogan and Ozan Buyukyilmaz, "The Effect of Social Media Usage on Students; Stress and Anxiety: A Research in Karabuk University Faculty of Business" (2017) argues that the frequent usage and duration of use of social media increases students stress and anxiety levels. In this paper the authors analyze the influence of social media applications on individuals' psychological situations. The data used in this study was collected from 487 students continuing their education in Karabuk University Business Faculty by using the survey method. According to the author personal computers, mobile devices and new internet developments have a direct or indirect impact on psychological states such as stress and anxiety. Aydogan and Buyukyilmaz assessed the relationship between density levels of social media, self-efficacy, and stress. It was reported that the self-efficacy levels decrease as the frequency of social media usage increase while a tendency to have stress increased.

A second research paper "Social media use, stress, and coping" by researcher Lara N. Wolfers and Sonja Ultz (2022) which purpose is to understand the association between social

media use and stress. In this research the authors try to determine when social media serves which stress functions and when social media reduces or increases stress. They show that social media can serve three functions in the stress-coping process: stressor, resource, and coping tool. They argue that while social media can have these functions over stress and be helpful in the coping process but over time this could mean that social media causes stress. The authors describe social media as a trigger for stressors such as anxiety approval, fear of missing out, and misinformation. They mention that social media can be used as a resource to find role models, support from others and guidance. Lastly Wolfers and Ultz describe the use of social media as a coping tool, by using it as a way for self-distraction.

In a third literature paper by Lei Zhao (2023) called "Social Media Addiction and Its Impact on College Students' Academic Performance: The Mediating Role of Stress" analyzes the negative effect that social media has on college students, such as social media addiction and decline in academic performance. This paper explains that social media addiction increases the stress level of students, and this stress is impacted in their academic grades. Zhao researches the relationship between social media addiction, stress and academic performance in data collected from 372 Chinese college students. This study concludes that both addiction to social media and stress have a big effect on these college students 'academic performance.

A fourth research paper by author Masood, A., Luqman, A., Feng, Y., & Ali, A. "Adverse consequences of excessive social networking site use on academic performance: Explaining underlying mechanism from stress perspective" (2020) argues the reason for using social networking sites, the corresponding stress and strain (cognitive distraction), and consequent poor academic performance on undergraduate students. This study focused on one social application, Facebook. Results showed that the excessive use of social networking sites is a cause of distraction

among students, therefore influences academic performance. The main reason of this study was to protect the well-being of social media users and create a healthy and strong online social and educational environment.

A last literature paper "Online Reputation and Stress: Discovering the Dark Side of Social Media" written in 2021 by authors Faseen Amin and Mohammad Furqan Khan describes social media user's concern for online reputation and its relationship with stress. This study focused on 350 university students from India. The results showed a positive relationship between 'concern for online reputation' and 'social media stress'. According to this study users do not expect negative experiences with social media, they believe social media is used for relaxation and social relationships, but it can also create an unfavorable environment which makes users more vulnerable to harm. Amin and Khan believe that social media stress and dependency can be detrimental for the development of an individual, especially at young age, concluding that social media usage should be limited, and some applications need to be age restricted.

II.   Theoretical Model

The purpose of this empirical analysis is to determine whether social media exerts an effect on student-athlete stress. The dependent variable in the equation is Stress. It is natural to feel stressed at different points of your life, the variables that affect the scale of stress someone feels vary on each occasion. Stress is simply a fact of nature—forces from the outside world affecting the individual (Peter Panzarino, 2008). We can say stress is a reaction or response to a change. In this investigation the value of stress depends on the changes in the independent variables.

Stress is the effect of the combination of all the independent variables together, in this case the main independent variable is social media usage. "Social media is the collection of tools and online spaces available to help individuals and businesses to accelerate their information and communication needs" (Schultze, A. 2009) When used right, social media can be used as a positive device for networking, when used negatively and excessively it can create stress. There are other factors that may affect someone's stress level. This study analyzes the change in levels of stress while analyzing the change in 11 independent variables. The value of each independent variable does not alter when there is a variation on another independent variable in the study. The 11 independent variables in this study are: SMusage, athlete, gender, year, classes, HomeworkHours, GPA, sleep, employed, WorkHours, and PracticeHours. These independent variables were chosen due to how they correlate to stress levels.

The data used in this study was extracted from a survey in a single point in time, which makes this a cross sectional study. The group of respondents was constituted by 70 Sacred Heart University students. The data collected will be used to run a multiple linear regression model, which assumes that the slope of the relationship between the dependent variable (stress) and the independent variables is constant. This model consists of 1 dependent variable and 2 or more independent variables, in this study 11 independent variables. The regression model will be used to forecast the effect on the dependent variable when there is a change in the independent variables.

The model is identified as:

$$Stress = \beta_0 + \beta_1 SMusage + \beta_2 Athlete + \beta_3 Gender + \beta_4 Year + \beta_5 Classes + \beta_6 HomeworkHours + \beta_7 GPA + \beta_8 Sleep + \beta_9 Employed + \beta_{10} WorkHours + \beta_{11} PracticeHours$$

III.   Empirical Section

a. Data section:

The dependent variable in this study was Stress, which was a quantitative measurement with a scale of 1 to 10, with 1 being not stresses and 10 being very stressed. All other independent variables vary between quantitative and qualitative measurement.

- *SMusage* = represents the total usage of social media per day (0= less than 3 hours, 1= 3-5 hours, 2= 5-7 hours, 3= 7-9 hours, 4= 9-11 hours, 5= 11-13 hours, 6= more than 13 hours)

- *Athlete* = 1 if the individual is a student-athlete, 0 otherwise

- *Gender* = 1 if the individual is female, 0 otherwise

- *Year* = represents the class year of the individual (1= freshman, 2= sophomore, 3= junior, 4= senior)

- *Classes* = represents the quantity of classes the individual is taking in the semester (3= less than 4 classes, 4 classes, 5 classes, 6 classes, 7= more than 7 classes)

- *HomeworkHours* = represents the time the individual spends doing homework per day (0= less than 1 hour, 1= 1-2 hours, 2= 3-4 hours, 3= 5-6 hours, 4= 7 or more hours)

- *GPA* = represents the average GPA per individual (0= Under 2.0, 1= 2.0-2.5, 2= 2.6-3.0, 3= 3.1-3.5, 4= 3.6-4.0)

- *Sleep* = represents the time the individual sleeps per day (0= less than 3 hours, 1= 4-5 hours, 2= 6-7 hours, 3= 8-9 hours, 4= more than 9 hours)

- *Employed* = 1 if the individual is employed, 0 otherwise

- *WorkHours* = represents the time the individual spends working per day (0= no hours, 1= 1-7 hours, 2= 8-12, 3= 13-20 hours 4= more than 20)

- *PracticeHours* = represents the time the individual spends practicing a sport per week (0= no hours, 1= 1-3 hours, 2= 4-6, 3= 7-9 hours 4= 10-12, 5= 13-15, 6= more than 20)

The hypothesis for each variable is important to the outcome in the investigation. The hypothesis

signs for this study were:

Table 1.1:

Hypothesis Table												
Variable	Stress	Social Media Usage	Athlete	Gender	Year	Classes	Homework Hours	GPA	Sleep	Employed	Work Hours	Practice Hours
Expected sign	+	+	+	+	+	+	+	+	+	+	+	+

a. Data results:

Quantitative analysis: use of models such as regression analysis

Model 1:

Dependent Variable: STRESS
Method: Least Squares
Date: 04/21/23   Time: 22:35
Sample: 1 70
Included observations: 70

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.828330	2.353832	2.051263	0.0448
SMUSAGE	0.312110	0.245978	1.268853	0.2096
ATHLETE	-1.035221	0.960999	-1.077235	0.2858
GENDER	0.383608	0.486658	0.788249	0.4338
YEAR	-0.008913	0.286628	-0.031097	0.9753
CLASSES	0.405299	0.333340	1.215875	0.2290
HOMEWORKHOURS	0.819323	0.300474	2.726773	0.0084
GPA	-1.093683	0.395279	-2.766864	0.0076
SLEEP	0.414607	0.450211	0.920917	0.3609
EMPLOYED	0.779728	0.540739	1.441968	0.1547
WORKHOURS	0.001464	0.193206	0.007576	0.9940
PRACTICEHOURS	0.280274	0.201210	1.392945	0.1690

R-squared	0.300237	Mean dependent var	6.171429
Adjusted R-squared	0.167523	S.D. dependent var	2.028574
S.E. of regression	1.850875	Akaike info criterion	4.223999
Sum squared resid	198.6927	Schwarz criterion	4.609455
Log likelihood	-135.8399	Hannan-Quinn criter.	4.377106
F-statistic	2.262291	Durbin-Watson stat	2.511392
Prob(F-statistic)	0.022595		

The data was imputed into an ordinary least squares regression. This resulted into the

equation of Stress = 4.828330 + 0.312110 * SMusage – 1.035221 *Athlete + 0.383608 * Gender

– 0.008913 *Year + 0.405299 * Classes + 0.819323 * HomeworkHours – 1.093683 * GPA +

0.414607 +Employed + 0.001464 *WorkHours + 0.280274 * PracticeHours

- For a 1 unit increase in stress, there is a 0.312110 increase in social media usage (ceteris paribus)
- For a 1 unit increase in stress, there is a 1.035221 decrease in student-athlete (ceteris paribus).

- For a 1 unit increase in stress, there is a 0.383608 increase in gender (ceteris paribus).

- For a 1 unit increase in stress, there is a 0.008912 decrease in year (ceteris paribus).

- For a 1 unit increase in stress, there is a 0.405299 increase in classes (ceteris paribus).

- For a 1 unit increase in stress, there is a 0.819323 increase in homework hours (ceteris paribus).

- For a 1 unit increase in stress, there is a 1.093683 decrease in GPA (ceteris paribus).

- For a 1 unit increase in stress, there is a 0.414607 increase in sleep (ceteris paribus).

- For a 1 unit increase in stress, there is a 0.779728 increase in employed (ceteris paribus).

- For a 1 unit increase in stress, there is a 0.001464 increase in work hours (ceteris paribus).

- For a 1 unit increase in stress, there is a 0.280274 increase in practice hours (ceteris paribus).

Variables	Table 1.2 Original Models										
Stress	Model I	Model II	Model III	Model IV	Model V	Model VI	Model VII	Model VIII	Model IX	Model X	Model XI
Social Media Usage	0.3 (1.17)	0.31 (1.2)	0.31 (1.21)	0.31 (1.2)	0.29 (1.15)	0.26 (1.06)	0.17 (0.7)	0.18 (0.74)	0.25 (1.03)	0.25 (1.02)	0.31 (1.27)
Athlete		-0.23 (-0.47)	-0.21 (-0.43)	-0.24 (-0.47)	-0.16 (-0.32)	-0.06 (-0.13)	0.04 (0.09)	0.03 (0.05)	0.08 (0.17)	0.09 (0.17)	-1.03 (-1.08)
Gender			0.46 (0.92)	0.49 (0.95)	0.57 (1.13)	0.33 (0.66)	0.38 (0.78)	0.34 (0.71)	0.33 (0.7)	0.34 (0.69)	0.38 (0.79)
Year				-0.08 (-0.281)	-0.001 (-0.00)	0.01 (0.05)	0.13 (0.49)	0.07 (0.26)	-0.02 (-0.08)	-0.02 (-0.08)	-0.01 (-0.03)
Classes					0.57 (1.70)	0.42 (1.29)	0.49 (1.53)	0.43 (1.32)	0.41 (1.28)	0.41 (1.22)	0.41 (1.22)
Homework Hours						0.74 (2.45)	0.7 (2.42)	0.78 (2.61)*	0.77 (2.6)*	0.77 (2.56)*	0.82 (2.73)*
GPA							-0.89 (-2.47)	-1.07 (-2.68)*	-1.05 (-2.67)*	-1.05 (-2.65)*	-1.1 (-2.77)*
Sleep								0.47 (1.03)	0.42 (0.94)	0.42 (0.93)	0.41 (0.92)
Employed									0.74 (1.58)	0.73 (1.34)	0.78 (1.44)
Work Hours										0.005 (0.03)	0.001 (0.01)
Practice Hours											0.28 (1.39)
Obs	70	70	70	70	70	70	70	70	70	70	70
Adj R^2	0.02	0.02	-0.01	-0.02	0.01	0.08	0.15	0.15	0.17	0.15	0.17
F-stat (p-value)	1.36 (0.25)	0.79 (0.46)	0.81 (0.49)	0.62 (0.65)	1.09 (0.38)	1.98 (0.08)	2.7 (0.02)	2.5 (0.02)	2.55 (0.01)	2.26 (0.03)	2.26 (0.02)
Heteroskedasticity Test	2.09 (0.13)	0.93 (0.45)	2.1 (0.06)	1.36 (0.21)	0.93 (0.55)	1.45 (0.14)	1.17 (0.32)	1.28 (0.25)	1.21 (0.33)	1.93 (0.18)	1.16 (0.33)
Serial Correlation Test (DW Stat)	2.34	2.35	2.36	2.38	2.42	2.44	2.36	2.39	2.42	2.42	2.51

Notes: t-stat in parenthesis. * Indicates significant at 1% level

T- statistics results:

When running a regression analysis for each model, it is crucial to look for the t-statistics. When this is bigger that 2.578 absolute value, the variable is significant at 1% level, meaning that there is a confidence level of 99%. In this case, the main question was if stress level was increased when social media usage in student-athletes was increased. When considering the t- statistics in each model for social media usage and for athlete, for the first one the t-statistic was |1.17| and for the second variable it was |0.47|. Both t- statistics are not bigger 2.578. These findings result in a failure to reject of the null hypothesis, therefore, there is no correlation between these variables and stress level. We can say that social media usage is not a predictor for stress (Graph 1) and being a student-athlete does not impact an individual stress level. Other variables such as gender, year, classes, sleep, employed, work hours, and practice hours do not fall into the 1% significance level either. All these t-statistics are smaller than 1.65, therefore we do not reject the null hypothesis, we cannot reject that the coefficient is zero, so these variables are statistically insignificant. For that reason, we can't confidently say that there is a relationship between this variables and stress level. Nonetheless, two variables t-statistics in the regression analysis do fall in this sector, these variables are homework hours and GPA. The T-statistics absolute value in both variables is more than 1.96 in Model VI and VII, this will result in a rejection of the null hypothesis with a 95% confidence level. Starting in Model VIII, the t-statistics absolute value for homework hours is bigger than 2.578, this means that we reject the null hypothesis that homework hours increase stress level with 99% confidence. We can say that the more time an individual spends doing homework or studying the more stress they feel (Graph 2). For GPA, the T-stats absolute value is also bigger than 2.578, therefore we would also reject the null hypothesis that there is an

increase of stress level when an individual has a better GPA. In this case, we could mention that students with a higher GPA tend to handle stress better with 99% confidence level.

F- statistics result:

Additionally, when the f-statistics probability in a regression is more than 10% or 0.1, we cannot reject that the variables together equal zero. In this regression Model I-V have an f- stat probability bigger than 0.1, therefore since we fail to reject that these variables together equal to zero, we know that they are not related. From model VI includes homework hours variable and model VII-XI includes both homework hours and GPA, since the f-stat probability in these models is lower than 0.1 we reject the null hypothesis that all those variables together equal to zero.

Heteroskedasticity result:

In the next section of the table, Heteroskedasticity test is presented. A white Heteroskedasticity test was run in all regression models but the last one where a Breusch-Pagan-Godfrey test was run. Every model rejected the null hypothesis, therefore there was no Heteroskedasticity, instead there was Homoskedasticity.

Serial Correlation Test (Durbin- Watson Statistic) result:

For every Model, I – XI, the Durbin-Watson test was run to indicate us if there is a serial correlation in the model's regression. If Durbin- Watson stat is higher than 1.75, there is no serial correlation, if it is below 1.6 you may have serial correlation if it is between 1.7 and 1.6 serial correlation is inconclusive. For every regression model the Durbin- Watson stat was higher than 2.3, therefore higher than 1.75, which means that none of the models have serial correlation.

IV. Conclusion

Through the regression model, this study concludes that there is no direct effect between social media usage in student-athlete and an increase in level of stress. This study has found that people who uses more social media are not more or less stressed, and that student-athletes are not more or less stress than non-athlete students. Two variables do influence stress level: homework hours and GPA. On one hand stress level increases when the individual spends more time studying or doing homework. On the other hand, stress levels are higher when an individual GPA is higher and vice versa.

Based on the research findings, some policy recommendations from are encouraging a balance study time, given that homework and study hours are a significant predictor of stress levels, a good approach would be prioritizing well-being and self-care when focusing too much on study sessions. Another policy recommendation would be academic support, such as academic counseling, because having a good GPA increases chances of high stress levels. Since this study did not find a significant difference between stress in student-athletes and non-athlete students, policies could also promote physical activity as a form of managing stress.

Some suggestions for further research include replicating this study with a different population, instead of focusing on Sacred Heart University students and student-athletes, focus on working professionals, high school students, or other colleges. Future research could also investigate the relationship between a new dependent variable and social media usage, such as academic performance, self- esteem, or well-being. This study found a negative relationship between stress and GPA, new studies could research the underlying mechanisms of this relationship.

V.   References

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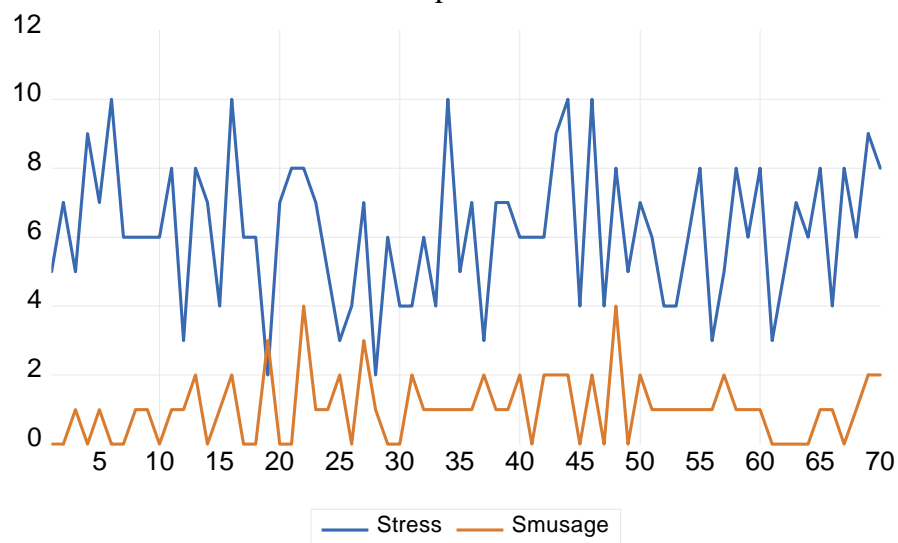
VI. Appendix

Table 1.3:

Main Table					
Variable Name	Observations	Mean	Std. Dev.	Max	Min
Stress	70	6.2	2.03	10	2
Social Media Usage	70	1.0	0.96	4	1
Athlete	70	0.6	0.49	1	0
Gender	70	0.6	0.49	1	0
Year	70	2.8	0.88	4	1
Classes	70	5.0	0.58	6	4
Homework Hours	70	1.5	0.81	3	0
GPA	70	3.6	0.65	4	1
Sleep	70	2.2	0.60	3	1

Employed	70	0.5	0.50	1	0
Work Hours	70	1.2	1.53	5	0
Practice Hours	70	2.9	2.30	6	0

Graph 1:

Stress   Smusage

Graph 2:

Stress   HomeworkHours